

Eastside

Chapter 3

Alternatives

Contents

Introduction	1
Alternatives Considered But Eliminated From Detailed Study	1
Development of Alternatives Considered in Detail	1
Mitigation	2
Description of the Alternatives	3
Alternative 1	6
Alternative 2	13
Features Common to Alternatives 3 through 7	18
Alternative 3	21
Alternative 4	28
Alternative 5	36
Alternative 6	45
Alternative 7	47
Objectives and Standards	59
Definitions	59
Alternative 1	59
Alternative 2	71
Index to Table 3-5	80
Table 3-5 (Objectives and Standards for Alternatives 3 through 7)	87
Comparison of Alternatives	181
Differences Between Alternatives	182
Comparison of the Effects of the Alternatives	184
User's Guide	205

Key Terms

Adaptive management ~ A type of natural resource management that implies making decisions as part of an on-going process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society.

Disturbance ~ Any event that alters the structure, composition, or function of terrestrial or aquatic habitats; fire, flood, and timber harvest are examples of disturbances.

Desired Range of Future Conditions ~ A portrayal of the land, resource, or social and economic conditions that are expected to result in 50 to 100 years if objectives are achieved; in this document, portrayed as a range of conditions. A vision of the long-term condition of the land.

Ecological integrity ~ The elements of biodiversity and the functions that link them together and sustain the entire system; the quality of being complete; a sense of wholeness.

Ecological process ~ The flow and cycling of energy, materials, and organisms in an ecosystem.

Endemic species ~ Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

Lethal (stand-replacing) fires ~ In forests, fires in which less than 20 percent of the basal area or less than 10 percent of the canopy cover remains; in rangelands, fires in which most of the shrub overstory or encroaching trees are killed.

Maintain ~ to continue; to keep ecosystem functions, processes, and /or components (such as soil, air, water, vegetation) in such a condition that the ecosystem's ability to accomplish current and future management objectives is not weakened. Management activities may be compatible with ecosystem maintenance if actions are designed to maintain or improve current ecosystem conditions.

Mature and old multi-story forest ~ Forest characterized by two or more canopy layers with generally mature and old trees in the upper canopy. Understory trees are also usually present. It can include both shade-tolerant and shade-intolerant species, and is generally adapted to a mixed fire regime of both lethal and non-lethal fires.

Mature and old single-story forest ~ Forest characterized by a single canopy layer consisting of mature and old trees. Understory trees are often absent, or present in randomly spaced patches. It generally consists of widely spaced, shade-intolerant species, such as ponderosa pine and western larch, adapted to a non-lethal, high frequency fire regime.

Mature ~ Refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

Nonlethal fire ~ In forests, fires in which more than 70 percent of the basal area or more than 90 percent of the canopy cover survives; in rangelands, fires in which more than 90 percent of the vegetative cover survives (implies that fire is occurring in an herbaceous-dominated community).

Old Forest ~ Refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

Proper Functioning Condition (PFC) ~ Riparian-wetland areas achieve Proper Functioning Condition when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows. This thereby reduces erosion and improves water quality; filters sediment, captures bedload, and aids floodplain development; improves floodwater retention and groundwater recharge; develops root masses that stabilize stream banks against cutting action; develops diverse ponding and channel characteristics to provide habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and supports greater biodiversity. The functioning condition of riparian-wetland areas is a result of the interaction among geology, soil, water, and vegetation.

Introduction

Chapter 1 explains the purpose of, and need for, the action proposed by this environmental impact statement (EIS). It also briefly describes the scoping process that identified the significant issues addressed by this EIS. Chapter 2 describes resource conditions and trends. Chapter 3 presents a range of alternative management strategies, developed in response to the information presented in Chapters 1 and 2.

Chapter 3 presents seven alternatives in detail. Alternatives 1 and 2 are each variations of a “No Action” alternative, while Alternatives 3 through 7 are “action” alternatives. The term “No Action” does not mean no management; rather it is a term used in the National Environmental Policy Act (NEPA) to signify an alternative that is a continuation of current management, and no *different* action is required.

Each action alternative was formulated through a multi-step process. For help in understanding these alternatives, please see “A User’s Guide to the Action Alternatives” found at the end of this chapter.

Alternatives Considered But Eliminated From Detailed Study

During the extensive public involvement process that started with the publication of the Notice of Intent to prepare this EIS, several public groups, tribes and other government agencies participated by offering written suggestions for formulation of alternatives or for parts of an alternative. Those offering suggestions included several American Indian tribes, Eastside Ecosystem Coalition of Counties, Weyerhaeuser Corporation, Boise Cascade Corporation, World Wildlife Fund, and federal regulatory agencies, including the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency.

Input submitted by several American Indian tribes included proposals on aquatic conservation strategies, socio-economic considerations, and information relating to trust responsibilities. This input was considered and used during alternative development.

An aquatic conservation strategy was proposed based in part on input from the Association of Forest Service Employees for Environmental Ethics (AFSEEE) and the Columbia River Inter-Tribal Fish Commission (CRITFC). Much of this strategy has been incorporated into Alternative 7. Additional interactions with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency led to modification of aquatic strategies for other alternatives.

Suggestions were reviewed by the Eastside and Upper Columbia River Basin EIS Teams in light of the purpose and need statement, issues identified through the public scoping process, the level of detail at which this EIS was written, information available in the *Scientific Assessment* from the Science Integration Team, and the themes of the alternatives. To the extent the suggestions helped meet the purpose and need and address identified issues at the broad scale of this EIS, they were used in development of the “action” alternatives.

Only one complete alternative from outside the government was presented for the EIS Teams’ consideration. This came from the Association of Forest Service Employees for Environmental Ethics (AFSEEE). The EIS Teams determined that, taken in its entirety, the AFSEEE alternative did not fully address the purpose of and need for action. Specifically, it did not meet the need to support the economic and/or social needs of people, cultures, and communities, and to support predictable and sustainable levels of goods and services from Forest Service- and BLM-administered lands. Further, the proposed alternative was not based on the *Scientific Assessment*. Although the AFSEEE alternative was not described in its entirety as a separate alternative, nor was it analyzed in detail, several of its elements were incorporated into Alternative 7.

Development of Alternatives Considered in Detail

Alternative development began with the purpose of and need for the proposed action described in Chapter 1. Briefly, the purpose is to provide a coordinated approach to a scientifically sound, ecosystem-based management strategy for lands administered by the Forest Service or BLM in the

project area. The need is to restore and maintain long-term ecosystem health and ecological integrity and to support the economic and/or social needs of people, cultures, and communities, by providing predictable and sustainable levels of goods and services from Forest Service- or BLM-administered lands.

The action alternatives (Alternatives 3 through 7) are all intended to meet the purpose and fulfill the need. The No Action alternatives (Alternatives 1 and 2) were not designed to fully satisfy the purpose and need, but to provide the National Environmental Policy Act required benchmarks against which to evaluate the action alternatives.

Alternative 1 would continue management specified under the existing regional guides and forest plans for Forest Service-administered lands, and resource management plans and management framework plans for BLM-administered lands. The EIS Teams did not describe all of these current plans in Alternative 1, because the plans were written at a more detailed scale than is appropriate for this EIS. Instead, planners from both agencies reviewed existing plans and consolidated their direction into objectives, standards, and guidelines that are representative of existing plans at the broad scale. The planners, in collaboration with the EIS Teams, then described the “desired range of future conditions” that was expected to result from the existing plans if they were successfully implemented. Many of the objectives and standards listed in Alternative 1 appear in most of the existing plans. However, the description of Alternative 1 does not include all of the decisions of any one current plan, nor do all of the objectives and standards of Alternative 1 appear in any one land use plan in the project area.

Alternative 2 includes the direction of Alternative 1, and, in addition, would adopt recent interim strategies (PACFISH, INFISH, and Eastside Screens) as the direction for the long term. The desired range of future condition for Alternative 2 is the same as that for Alternative 1, with the addition of expected or desired conditions to reflect long-term application of interim strategies.

The action alternatives were developed to respond to the seven issues identified through the scoping process (as described in Chapter 1) as well as to the resource conditions and trends identified by the Science Integration Team (SIT), as summarized in Chapter 2. The themes of the

alternatives were developed to provide a range of reasonable alternative responses to identified issues. For example, Issue 2 is, “To what degree, and under what circumstances, should restoration be active (with human intervention) or passive (letting nature take its course)? The theme of Alternative 4 is to aggressively restore ecosystem health through active management. The theme of Alternative 7 is to establish a system of reserves on BLM- and Forest Service-administered land where the level of human use and management is very low (passive), which allows for nature to restore ecosystem health. The other alternatives portray levels of human intervention that lie between these two “sideboards” of active versus passive management.

Mitigation

The alternatives include goals and objectives. Achieving them may require alteration of the physical and biological environment. However, the anticipated record(s) of decision for this EIS do not themselves fund, authorize, or carry out ground-disturbing activities.

The alternatives include standards and guidelines that would minimize the environmental consequences associated with modifying the landscape. Because standards are mandatory, they will prevent certain future actions, or parts of them, from occurring (40 CFR 1508.20(a)). Standards will also minimize environmental impacts by limiting the level of future activities (40 CFR 1508.20(b)). In addition, each alternative includes a component of restoration (40 CFR 1508.20(c)). Thus, mitigation is an integral component of each of the alternatives.

Further site-specific mitigation measures will be adopted in conjunction with projects implementing this decision. Such decisions will be preceded by additional environmental analysis, at which time additional concerns regarding mitigation will be addressed.

Description of the Alternatives

What Is Restoration?

Restoration is a term and concept used as a basis for several of the action alternatives. It means to restore the functions and/or processes associated with certain ecosystem components. In a general sense, it relates to achieving and/or maintaining more sustainable conditions over time. Alternatives 4, 6, and 7 heavily emphasize restoration to achieve more sustainable ecosystem function, structure, and process. A combination of active and passive actions are anticipated to achieve the goals and objectives of these alternatives. Restoration can take on many forms, and some of these are briefly discussed below.

Active Restoration ~ Investments of time, money and human resources are generally necessary for active restoration. As described in Table 3-12 and in other parts of the DEIS, active restoration can include a variety of activities.

Livestock management includes improved grazing systems, changing riparian management grazing practices, season of use, herding, number of animals, distribution, and kind of animals. Restoration of rangeland resources can be influenced by improved combinations of livestock management techniques.

Improving rangelands includes investments in fencing, stock water improvements, seedings, control of exotic weeds, and control of shrubs and juniper expansion. Active control of exotic weeds can benefit wildlife through improved habitat and soil and hydrologic functions, which can result in more natural or favorable fire regimes.

Upland restoration and riparian restoration includes improved road maintenance, plantings, instream channel improvements and riparian exclosures. Closed roads closed that still have a negative effect in the watershed can be obliterated and put back to the original slope.

Decreasing the negative impacts of roads includes decreasing road density through obliteration or permanent closures of primarily native surfaced roads, improving location and drainage, improving stability, reducing sediment, and more effective maintenance.

Prescribed fire includes the ignition of fire under controlled conditions to reduce fuels or alter species composition, structure, or stocking.

Prescribed natural fire is generally guided by approved fire management plans and is intended to reintroduce fire into ecosystems to achieve multiple benefits.

Timber harvest can be used to alter stocking, species composition and distribution, structure, seral stage, habitat condition, and favor large trees that are more resistant to fire, insects and disease. Patterns can be created that are more sustainable and resilient to catastrophic disturbances.

Thinning can be used to effectively reduce stocking levels and associated stresses, and alter species composition to more desirable mixes.

Active measures, such as reduction in stand density, fuels, and patterns of vegetation can help reduce risks in urban/rural/wildland interface lands, thus helping to sustain desirable wildland conditions.

Active restoration also includes such activities as altering recreation sites to improve streambank and sedimentation conditions. Managing vegetation patterns across the landscape can restore more sustainable mixes of successional stages in both rangelands and forestlands. These patterns can then contribute to better functioning connective corridors to improve genetic interactions of species. Investments are often needed to reconnect fragmented aquatic habitats that impede movement and interactions of species. Reduction of fuels in wildland/urban interface areas can protect other resources and improvements over time.

It can be expected that some activities will be designed and implemented to meet several objectives, including both social/economic and ecological restoration objectives. Some watersheds, for example, currently contain road systems which are negatively impacting aquatic species. These same watersheds may also have existing vegetation conditions which are undesirable. Carefully designed activities could address both the undesirable vegetation and road/watershed conditions in ways that improve the ecosystem over time, and also provide employment opportunities.

What Is Restoration? (continued)

Passive Restoration ~ Restoration of riparian function is often achieved by passive protective actions which allow vegetation, sediment flow and channel development to occur naturally. Aquatic conservation strategies establish priorities and protection for riparian areas and restrict activities that could degrade these values. Through this combination of restricting certain management activities, and allowing natural processes to work, riparian restoration can be successful.

In conjunction with active measures such as road closures, other objectives can often be achieved passively. For example, maintaining or restoring fisheries and wildlife habitats, reducing pressure on isolated populations, or retaining large dead or downed trees can occur naturally in some areas by reducing or restricting human access. Seasonal road closures can also benefit wildlife species or reduce the risk of human-induced wildfires.

Often policy decisions or direction can help restore ecosystem function or condition without requiring additional direct expenditures. Retention of connective corridors, snags, or large shade intolerant trees, such as ponderosa pine are done more by design than by investments. Strategies used to suppress wildfire often have long-term results affecting pattern and structure on the landscape. Restoration of favorable fire regimes can be achieved in part by how current fire policies are applied or altered.

Spatial Considerations ~ The forest and range clusters generally describe opportunities and priorities for restoration. These are augmented by activity tables indicating expected activity levels by cluster and by alternative. Between Draft and Final EIS, the Project staff intend to develop more spatially specific information and prioritization for restoration and other activities, while addressing inherent risks.

Restoration Success ~ Restoration activities are expected to vary by alternative and local conditions. The success of restoration activities needs to be closely monitored to assure desired results occur. Through adaptive management, land managers can learn which actions are most successful locally, and can constantly adjust practices to achieve desired restoration results.

Each of the seven alternatives considered in detail is described below. For each alternative, a brief description of the alternative (“theme”) is presented, followed by the design of the alternative and the desired range of future conditions. Tables 3-6 and 3-7 display management activities, activity levels, objectives, and management emphases for forest and range clusters. Forest and range clusters are described in the last section of Chapter 2 (Integrated Summary of Conditions) and are shown on Maps 2-47 and 2-48.

Management Emphasis

One of six management emphases was given to each forest and range cluster (see last section in Chapter 2 for definition). The emphases are Conserve, Restore, Produce, Conserve-Restore, Conserve-Produce, and Restore-Produce. See the User’s Guide at the end of this chapter, the Integrated Summary of Conditions at the end of Chapter 2, and the *Scientific Assessment* for more information. Conserve, Restore, and Produce are defined as follows:

Conserve ~ Management emphasis is on protection and maintenance of forest, rangeland, and aquatic conditions, health, and integrity. Management recognizes that natural processes dominate the landscape and gradual change will occur. Generally, Conserve is applied as the primary management strategy to areas with moderate to high ecological integrity. Secondly, the Restore or Produce strategies are applied when associated benefits can be provided.

Restore ~ Management emphasis is designed to move ecosystems to desired conditions and processes, and/or to healthy forestlands, rangelands, and aquatic systems. A variety of management induced activities dominate the landscape. Generally, Restore strategies are applied to areas of moderate to low ecological integrity. Secondly, the Conserve strategy is applied to areas with high integrity, and the Produce strategy is used when associated benefits can be provided.

Produce ~ Management emphasis directed at providing, growing or making goods and

What is meant by the term “Conserve”?

The term “conserve” is used to describe management emphasis for different sub-basins, and varies by alternative. In the broadest sense, it means to protect from loss or depletion. As applied in this document, the term implies the recognition of ecosystem functions and processes that are socially desirable and ecologically sustainable, and management of land, resources, and human interactions such that these are perpetuated in the future. Management emphasis of conserve can be attained both passively and actively, and can take on many forms.

Active Conservation ~ Investments of time, money and human resources are generally necessary for active conservation. Management actions are generally preceded by some form of analysis aimed at understanding what functions and processes are occurring that make the situation desirable. Analysis should also address the risks and opportunities of perpetuating these desired conditions into the future. Some examples include:

- maintenance of roads and trails to prevent erosion or sedimentation that could adversely affect water quality;
- removal of culverts that obstruct the natural meandering of a stream;
- managing vegetation to perpetuate desirable structure for rare species;
- closing of new roads after project completion to maintain habitat for species requiring seclusion;
- periodically using prescribed fire to maintain parklike conditions; and
- adapting a grazing strategy to insure the maintenance of proper functioning condition.

Passive Conservation ~ This is usually achieved by conscious decisions to allow natural events to maintain existing conditions, or move conditions to a desired status over time. Risks vary substantially depending on vegetation types, natural disturbance regimes and introduced factors such as exotic plants. Passive conservation still requires monitoring to assure desired results occur over time. Some examples of passive conservation include:

- management of research natural areas;
- administrative protection of special areas where management activities and/or human access is limited;
- policies or programs that retain desirable elements in the landscape, such as policies to not allow large trees to be harvested for fuelwood; and
- allowing natural disturbance to occur, such as prescribed natural fire in wilderness.

In reality, under a conserve management emphasis, there are generally a combination of active and passive approaches. Managing a Wild and Scenic River corridor often includes the exclusion of some practices that are acceptable in other places (passive), but management of human activities such as rafting (active) so that overall, desirable outcomes are perpetuated over time. The conserve management emphasis recognizes that ecosystems and human values are dynamic and will continue to change over time. Coupled with this, however, is the need to maintain options for the future or to perpetuate conditions or trends that are socially acceptable and ecologically sustainable.

services available for human needs and/or desires, while sustaining productivity and maintaining associated values. Under Produce strategies, consumption-based activities dominate the landscape. This management strategy is applied to areas available and suitable for resource production in order to provide goods and services. A Restore strategy may be used secondarily when production can be benefited.

Management emphasis was developed and given to each forest and range cluster to indicate expected priorities and outcomes from management activities. These are not allocations in the traditional land management

planning sense. This emphasis was developed from the description of Management Priorities in Chapter 1, and given to the clusters by alternatives based on the themes of the alternatives and Desired Range of Future Conditions described later in this chapter. The intent was to indicate general priorities and outcomes to aid analysis of the effects of the alternatives. These management emphasis descriptions were not intended to be allocations of land areas or activities.

The management emphasis given to each cluster by alternative should be used during implementation to outline the framework and context to conduct management activities.

What is meant by the term “Produce”?

The Produce management emphasis generally means that actions are aimed at providing, growing, or otherwise making available goods and services for human needs within the capabilities of ecosystems. This is primarily an active management approach where landscapes are assessed for their capabilities and that is matched as best possible to human demands. Goods and services from these lands generate wealth, and provide for the well-being of communities and individuals. Existing laws for environmental protection are met, as is direction in existing management plans. The produce management emphasis also reflects the desired range of future conditions and is guided by standards and objectives in Table 3-5. Goods and services include a wide variety of benefits, ranging from timber products, livestock forage, and minerals, to harvestable populations of fish and wildlife, and developed recreation. Under this management emphasis, there are significant investments in money, time, and human resources to manage for conditions that will provide goods and services over time, while protecting resources and reducing impacts from wildfire, insects, and disease.

Local decision processes are intended to reflect these priorities, emphasis, and opportunities. Management emphasis is one part of the process that links broad-level decisions and information to finer levels, and plays an important role in mid-level analysis, as described in Appendix 3-1.

Alternative 1

Theme

Alternative 1 (No Action) continues management specified under existing Forest Service and BLM land use plans, as amended by the Northwest Forest Plan. Implementation of this alternative would occur assuming recent budgets. Analysis of a No Action alternative is a requirement of the National Environmental Policy Act (NEPA) and BLM and Forest Service planning procedures. This alternative displays the likely outcome of federal agencies use of existing plans to manage lands and resources into the future.

Existing Forest Service and BLM plans include Forest Service regional guides, forest plans (for each National Forest), and resource management plans and management framework plans (for portions of BLM Districts). The No Action Alternative includes direction from 31 National Forest plans and 44 BLM plans in the project area that were prepared between 1975 and 1995.

Although substantial variation exists among agency plans, the general management approach is to emphasize or accommodate sustained timber, wood fiber, and livestock forage production in an environmentally prudent manner while managing and protecting other resources and values.

Timber and livestock management are integrated and coordinated with the maintenance or enhancement of wildlife and fish habitat, scenic quality, recreation opportunities, and other resource values to achieve overall multiple use goals and objectives. On many areas, management of other resources or values such as recreation, wilderness, big game and fish habitat, or cultural resources is emphasized.

Design of Alternative 1

The underlying philosophy in Alternative 1 is one of multiple use of the Forest Service- or BLM-administered lands, to produce goods and services to help meet the needs of the American people. Many current plans emphasize sustained yields of timber, wood fiber and livestock forage, while maintaining site productivity and environmental quality.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 1 were selected.

Under Alternative 1, production is generally emphasized in both forest and range clusters (see table above, and Maps 3-1 and 3-2). A relatively high level of timber and livestock forage outputs is expected under many current plans in the project area.

Many current land use plans were based on the assumption of healthy ecosystem conditions. With a general focus on production from forestlands, many current plans rely on even-aged management practices leading to forests characterized by a regulated forest of early to mid-seral structures, seral species, and controlled densities and patterns. Generally, a minimum level of late/old structures

and habitats was planned. On rangelands, vegetation management is focused on providing forage for livestock and wildlife while protecting forage productivity and coordinating with other resource uses.

Many other resources and related activities, including recreation, wild and scenic rivers, mining, wildlife, fisheries, and wilderness are managed for their intrinsic values. Some resources, such as wilderness, are managed to protect and maintain their intrinsic values. Although restoration activities occur in Alternative 1, most are planned at relatively low levels. Exceptions include controlling stand density by moderate levels of thinning in Forest Clusters 3, 4, and 5, and high levels of prescribed natural fire in Forest Clusters 1 and 2, and Range Cluster 2.

Within Alternative 1 wildlife habitat management generally results from the coordination of forest and range management activities. Many plans incorporate management of habitats and habitat components for big game and other game animals, which could be relatively easily coordinated with vegetation management. Emphasis is on developing effective habitat by managing vegetative conditions and distribution of roads. Certain key habitats and habitat components such as late/old growth forests and snags and downed wood were generally planned to exist at relatively low levels (often the minimum) with the intent of maintaining species viability. The exception is in the area covered by the Northwest Forest Plan, which emphasizes management for old growth (late-successional) forest, increased habitat integrity and reduced fragmentation, other habitat components, and constrained timber and other management activities. Alternative 1 requires protection of unique habitats and recovery of threatened or endangered species.

Management of riparian and aquatic resources focuses on water quality and habitat components (pools, large wood, stable banks, vegetative conditions) through application of Best Management Practices (BMPs), which are accepted practices often focused on protection of key resources or prevention of an undesirable impact, while allowing for existing uses. Restoration of watershed and aquatic resources under Alternative 1 is encouraged. The Northwest Forest Plan includes an Aquatic Conservation Strategy that focuses on protection and restoration of riparian, aquatic, and watershed resources. The strategy limits

management activities such as timber harvest, roads, and others. In these areas, Key Watersheds require ecosystem analysis (see Map 3-3).

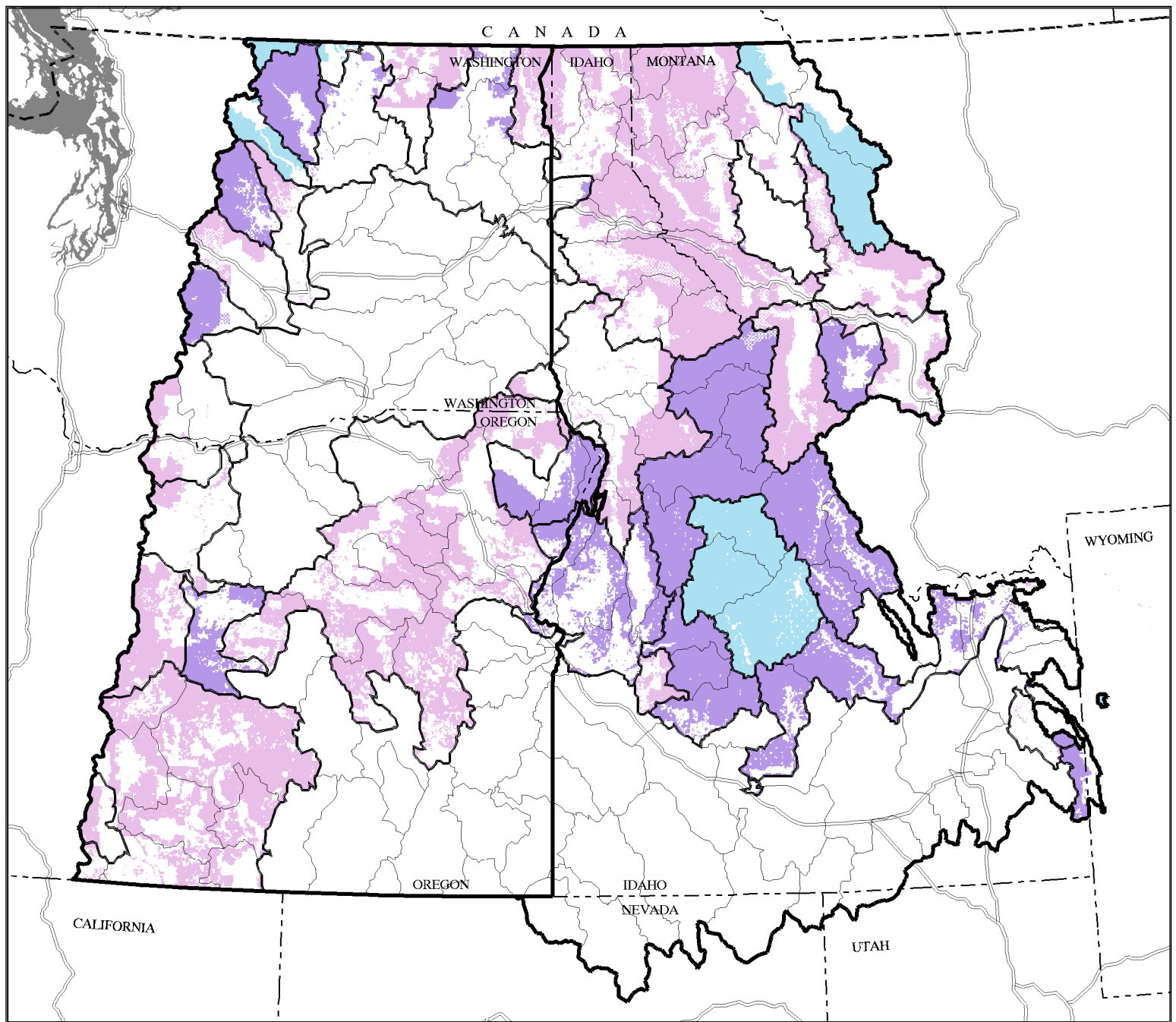
Desired Range of Future Conditions

Alternatives 1 and 2 are based on existing land and resource management plans currently being implemented by the BLM or the Forest Service. Within the project area, there are 75 existing plans. Each plan has desired future conditions or other expectations. The plans are from 6 to 21 years old and cover diverse ecosystems; therefore there are large differences in the desired future conditions described among the plans. This has been discussed in Chapter 1 and is one of the reasons for development of this environmental impact statement with more consistent management strategies. Recognizing the diverse expectations within the existing plans, the following is intended to display some generalized expected or desired conditions such that comparisons can be made with the other alternatives. As disclosed in Chapter 4, there have been significant challenges in achieving the desired range of future conditions of the existing plans.

Resource Management

Lands managed by the BLM or Forest Service will continue to provide a mix of natural resource-based goods and services. Management focuses on providing resource outputs including timber, livestock forage, huntable wildlife, and minerals while also providing for other uses and values including aesthetics, recreation opportunities, viewable wildlife, and clean air and water. Current management has improved some conditions on public lands. Resource management emphasis is different among National Forests and BLM districts across the project area based on the character of the land and resources, public interests, and land use plan decisions.

On Forest Service- or BLM-administered land, the general emphasis is to produce sustained levels of timber, wood fiber, and livestock forage in an environmentally prudent manner, while managing and protecting other resources and values. Under this approach, timber harvest and livestock outputs are planned to be near levels produced when the plans were approved. Timber production is planned only in areas classified as suitable for such production. Because BLM-administered lands and some

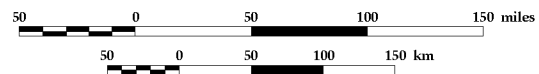












Map 3-1.
Alternative 1
Management Emphasis
for Forest Clusters

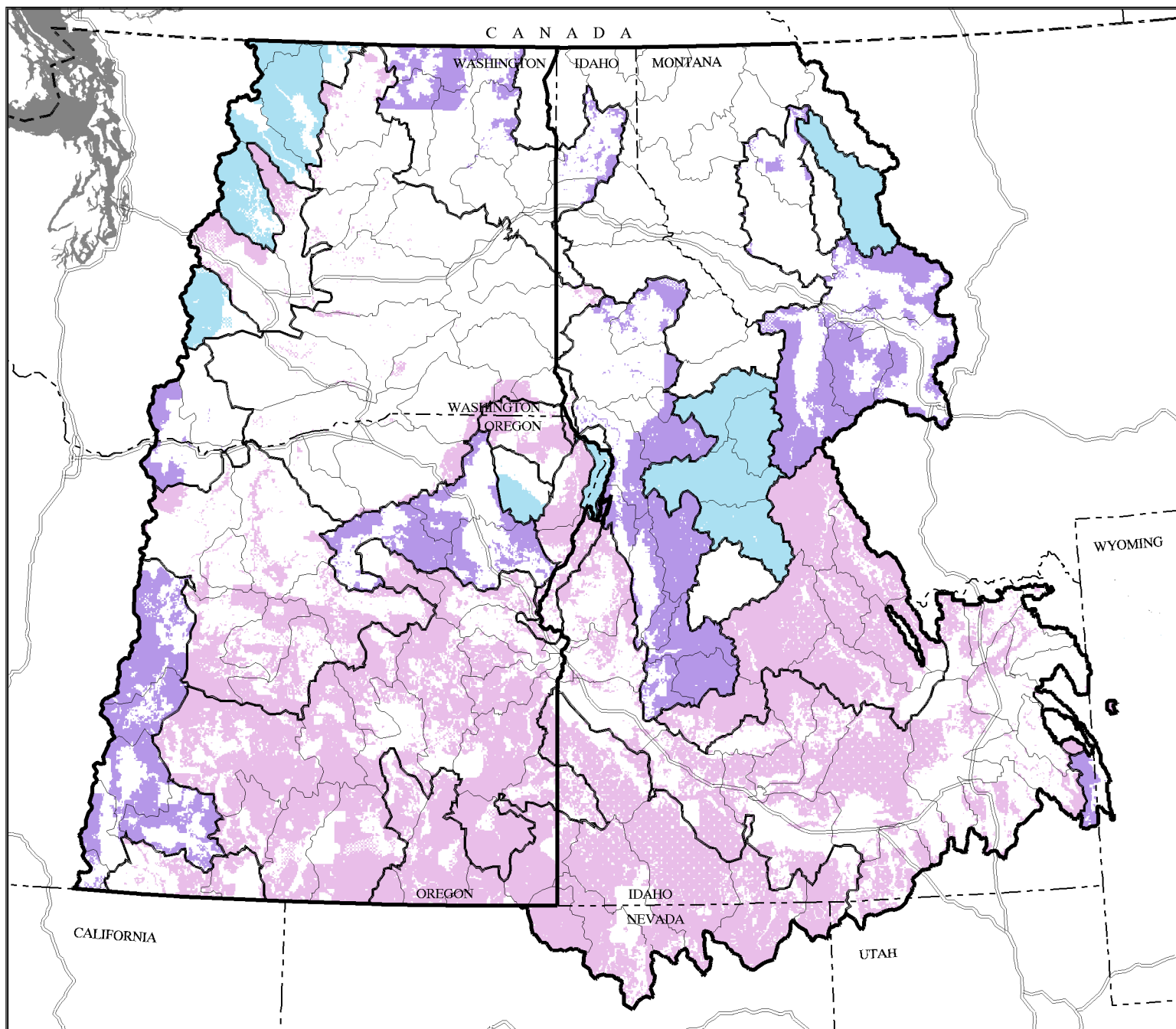
*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- | | | | |
|---|--------------------|---|--------------------|
|  | Conserve |  | 4th HUC Boundaries |
|  | Conserve / Restore |  | Major Roads |
|  | Restore |  | EIS Area Border |
|  | Restore / Produce |  | Cluster Boundary |
|  | Produce | | |
|  | Produce / Conserve | | |













Map 3-2.
Alternative 1
Management Emphasis
for Range Clusters

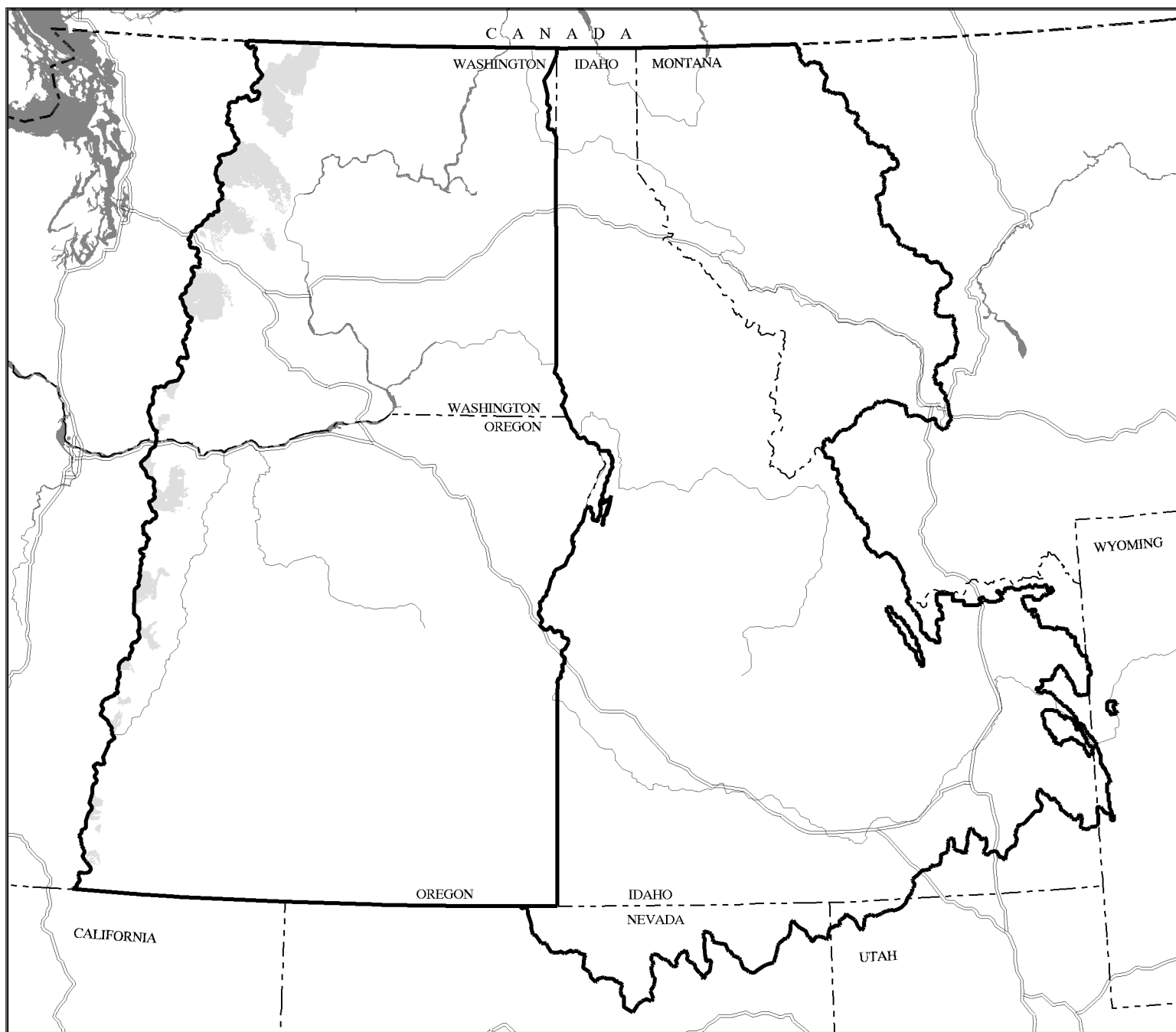
*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- | | | | |
|---|--------------------|---|--------------------|
|  | Conserve |  | 4th HUC Boundaries |
|  | Conserve / Restore |  | Major Roads |
|  | Restore |  | EIS Area Border |
|  | Restore / Produce |  | Cluster Boundary |
|  | Produce | | |
|  | Produce / Conserve | | |



Map 3-3.
Alternatives 1 and 2
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



Analysis Areas

Major Rivers

Major Roads

EIS Area Border



Alternative 1 Management Emphases for the Project Area

Management Emphasis	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Conserve	10	1	8	2
Produce	57	3, 4, 5	67	1, 4, 5, 6
Produce/Conserve	33	2, 6	25	3

National Forests tend to be grasslands and shrublands, the general management perspective is to produce forage for livestock grazing, wildlife, and wild horses at or near levels when plans were approved. Under current management, timber and livestock management are integrated and coordinated with the maintenance or enhancement of wildlife and fish habitat, scenic quality, recreation opportunities, and other resource values to achieve overall, multiple-use goals and objectives, and ecologic conditions. In general, most lands are open and accessible for mineral and energy resource exploration and development.

Forestland

Forests feature a diversity of stand conditions. Portions of the landscape are heavily influenced by commodity production and recreation use, while other locations are largely natural appearing. Lands suitable for timber production show evidence of management activity at the stand level. Use of available technologies result in a forest managed to favor seral species (such as ponderosa pine, lodgepole pine, western larch, Douglas-fir) with reduced stand densities, improved growth and yields, restored and maintained soil productivity, and prompt reforestation achieved with genetically improved trees. Use of prescribed fire and thinning to manage vegetation and reduce fuel loads and ladders is also evident. Some areas emphasize even-aged stand management. Horizontal diversity exists with a variety of patch sizes (less than 40 acres) and shapes visible. Stands are in a range of seral structural condition, primarily early (regenerated stands) to middle stages (stands near 20" diameter at breast height and up to 120 years old). Vertical diversity and a more natural appearing forest, with larger, older trees and several canopy layers exist in areas where uneven-aged management is emphasized, or long rotations are used. As a result of management over the long term, projected

annual timber yields of desired timber sizes and quality are produced; long-term timber harvest sustainability is attained. Increased transitory forage will be available for livestock, big game, and other wildlife use.

Rangeland

Grass-shrub uplands show steady improvement and positive trends in vegetative and improved structural diversity. Most areas are meeting or moving toward objectives. Changes have occurred through active grazing management and range improvement activities. As a result, authorized livestock forage use levels are near current levels, and output levels are maintained on a sustained basis.

Upland soils exhibit infiltration and permeability rates that are appropriate to soil types, climate, and landform. Riparian-wetland areas are in properly functioning condition. Stream channel morphology (including but not limited to gradient, width: depth ratio, channel roughness and sinuosity) and functions are appropriate for the climate and landform. Healthy, productive and diverse populations of native species exist and are maintained.

Disturbances

As a result of prescribed fire, thinning, and insect-control efforts, forest health, vigor, and diversity has improved and ecosystems are healthier. Resistance to epidemics has increased and undesirable impacts of insects, diseases, and weeds have been mitigated through integrated pest management.

Wildlife Habitat

The amount and diversity of wildlife habitat will be maintained or improved through time. Late/old seral forests and grass-shrublands exist in varying sized patches and in well-distributed

patterns across the landscape. Snags and dead and downed tree habitat continues to be available at planned and sustained levels. Some decline in old forest and dead and downed tree-dependent species will occur where intensive forest management activities reduce the total amount of these key habitats. Big game species continue to improve in many areas. Ongoing management of forestland and rangeland habitat components and conditions (such as vegetative cover, forage, and roads), and key areas maintain big game populations near state wildlife agency objectives. Hunting continues to be enjoyed throughout the project area. Improved forestland, rangeland, and riparian area conditions support and benefit a variety of wildlife species by increasing the quality, quantity, and variety of habitat. Such species include waterfowl, upland game birds, raptors, and nongame species. Management has helped to create the long-term changes and improvements that contribute to restoration of some sensitive species and toward recovery of some listed species.

On many National Forests and BLM Districts, big game habitat needs are emphasized through management of vegetation to achieve specified conditions. Old forests, dead and downed tree habitats and late-successional tall shrub habitats are provided. In timber harvest areas, old forests and dead and downed tree habitat is retained to meet wildlife requirements (See Pacific Northwest Regional Guide and 36 CFR 219.27).

Soil and Water

Across the project area, soil function, processes, and productivity are maintained or improved through prevention, mitigation, or restoration measures. Effective ground cover is present in amounts and distribution to prevent erosion. Water quality is enhanced through management, so most streams are providing cool, clear, clean water. The available water supply from agency lands remains essentially unchanged, although summer low flows are increased. In the long term, air quality is good. Although use of prescribed burning has increased, application of best management practices, expanded fiber use, and reduced catastrophic wildfire contribute toward quality air.

Protection and maintenance of soil and water resources and productivity is emphasized by all National Forests and BLM Districts.

Riparian Areas

Riparian areas and stream habitat conditions have improved as a result of protection and management. Management, including stream habitat enhancement and restoration work, has promoted desirable riparian vegetative species, density and structural conditions, floodplain and bank stability and resiliency, appropriate sediment budgets and water temperatures, and stream channel processes and characteristics. All conditions interact to support improved habitat, benefiting fish and wildlife across the project area. Improved riparian and instream conditions move fish habitat capability toward its potential. Some previously imperiled and other sensitive fish species show an increasing or stable trend in abundance and distribution.

Resource uses are coordinated to enhance fisheries, water quality, and riparian resources, focusing on maintaining, protecting, and restoring natural functions to achieve healthy and productive ecological conditions. Many National Forests and BLM Districts plan to maintain or enhance fish habitat capability and riparian resources, often through restoration and improvement activities.

Social and Economics

Many forested areas include wilderness, scenic areas, research natural areas, unroaded lands, old growth reserves, and other locations that are not subject to timber management activities. These areas would be influenced by fire and other disturbances, recreation, and other uses. Larger expanses of forests in mid- to late-seral stages with closed canopies will be evident, with patches of shade-intolerant or climax species. Other areas will show more open, sub-climax seral stages due to extensive use of prescribed fire. Some areas show evidence of younger seral stages due to stand-replacing wildfire and timber harvest. Prescribed and natural fires and other activities have reduced evidence of insects and diseases in most forests.

Plans identify areas where varied recreational opportunities are provided, such as in wildernesses, special interest areas, non-motorized and roadless areas, and areas with dispersed motorized activities. National Forests and BLM Districts also provide developed recreation areas and facilities and have programs to maintain scenic quality. National Forests

along the Cascade crest emphasize management of recreation and wilderness. Certain lands and features are identified and incorporated into a system of classified or special interest areas, areas of critical environmental concern, or research natural areas to protect and manage unique values such as scenic quality, wildlife, raptors, sensitive plants, historic sites, cultural resources, recreation opportunities, and others. Wilderness and wild and scenic river areas that have been designated or found administratively suitable for designation are managed to conserve their values.

Changing forestland and rangeland conditions influence recreation activities, settings, and experience opportunities. At the same time, demand for recreation of all types will grow substantially. Both agencies respond to this increased demand by providing additional recreation opportunities. In some areas more roads provide a base of heavily used and very popular roaded recreation opportunities. In other areas, increased road closures provide for more primitive or semi-primitive opportunities. Additional developed facilities, restored and maintained recreation sites, expanded and well-maintained trail systems, and new winter use areas are a few ways used to meet the demand. Visual quality will be emphasized in some recreation areas; natural-appearing conditions featuring larger trees or other desirable vegetation will be created and maintained. Some reduction in the amount of unroaded areas has occurred; however, wilderness and other unroaded areas continue to meet some of the demand for primitive opportunities across the project area. Frequency of encounters will be noticeably increased. All areas continue to emphasize their feature attractions such as wild rivers, scenic areas, wildlife and fish, botanical, geologic and historic areas and interpreted cultural resource properties.

The traditional industries that use and produce resources from Forest Service- or BLM-administered lands will continue to contribute to rural economic activity. Economic activity will be focused on recreation, timber, livestock forage, water, and other locally and regionally important resources.

Alternative 2

Theme

Alternative 2 applies recent interim direction as the long-term strategy for lands managed by the Forest Service or BLM. The interim direction was developed to retain options for management of affected federal lands while this environmental impact statement was being developed. Specific direction is described in the following decision notices:

- ◆ Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH), February 24, 1995, as amended by the Forest Service September 11, 1996 and by the BLM January 31, 1997. Applies to all or parts of Malheur, Ochoco, Okanogan, Umatilla, and Wallowa-Whitman National Forests; and Prineville, Spokane and Vale BLM Districts.
- ◆ Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (Eastside Screens), May 20, 1994; amended June 5, 1995; riparian standards were replaced July 31, 1995. Applies to all or parts of Colville, Deschutes, Fremont, Malheur, Ochoco, Okanogan, Umatilla, Wallowa-Whitman and Winema National Forests. PACFISH is used as the riparian screen requirement (see section above).
- ◆ Inland Native Fish Strategy (INFISH), July 28, 1995. Applies to all or parts of Colville, Deschutes, Fremont, Malheur, Ochoco, Okanogan, Wallowa-Whitman, and Winema National Forests.

The interim direction emphasizes protection and maintenance of aquatic, riparian, and wildlife resources while using conservative approaches to management. Direction for PACFISH and INFISH does not overlap (see Map 1-3 for locations). All other direction from current plans (Alternative 1) would continue into the future. In addition, the BLM has issued Statewide Instruction Memoranda for the conservation of bull trout habitat in the project area. Direction described in Alternative 1 applies to those areas not covered by interim direction.

Design of Alternative 2

The basic philosophy and approaches to management in Alternative 2 are the same as Alternative 1, with the exception of more conservative management strategies applied in this Alternative (see Maps 3-4 and 3-5). Additional emphasis is on the protection and maintenance of aquatic and riparian resources throughout the project area and vegetation and wildlife values on National Forests in the Eastside EIS planning area.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 2 were selected.

Due to the emphasis and mix of Conserve strategies (see table below), planned output levels for timber and wood fiber are less than Alternative 1. This, in part, reflects the long-term influence of the Eastside Screens and to some degree the effect of PACFISH and INFISH. Livestock production is planned at relatively high levels in Range Clusters 2 and 3 and moderate in all others. Management of other resources and values is intended to be the same as that under Alternative 1.

Planned restoration activities are nearly the same as Alternative 1 in forest clusters, with most being at relatively low levels. Exceptions include thinning at moderate levels in Forest Clusters 4 and 5, high levels of prescribed natural fire in Forest Clusters 1 and 2, moderate levels of watershed restoration in Forest Clusters 1, 2, and 3, and moderately decreased road density in Forest Cluster 5. Although active restoration is not a management emphasis in Alternative 2, the Eastside Screens employ passive and active restoration in timber sale areas. The intent is to achieve forest vegetative conditions within the natural or historic range of variability. Primary focus is on achieving composition, density, structure, and pattern that more closely resemble historic conditions for a given forest potential vegetation group. Within range clusters all restoration activities are planned at relatively low levels with the exception of prescribed natural fire, which would occur at relatively high levels (same as Alternative 1).

In the Eastside planning area, requirements of the Northwest Forest Plan, and direction for rangelands and other areas not subject to timber management,

still apply. However, wildlife management in areas supporting timber sales has been modified to incorporate the Eastside Screens. The Screens emphasize retention/development of late/old structures and patch sizes within historic range of variability; maintenance/development of linkages between old forests; meeting requirements for snags, downed logs, and green tree replacements; retention of larger trees (greater than 21" diameter at breast height); and providing habitat for goshawks.

Aquatic requirements from PACFISH/INFISH are incorporated throughout most of the project area including:

- ◆ establishing Riparian Habitat Conservation Areas (referred to as Riparian Conservation Areas [RCAs] in this document) and Riparian Management Objectives,
- ◆ incorporating associated site-specific standards and guidelines for resource management applied to riparian conservation areas and upland areas affecting riparian areas,
- ◆ designating key/priority watersheds or protection/restoration activities,
- ◆ using ecosystem analysis at the watershed scale, and
- ◆ focusing watershed restoration on degraded habitats to improve long-term conditions.

These requirements along with the Northwest Forest Plan provide a consistent approach to aquatic habitat management within most of the project area. Map 3-3 shows areas where ecosystem analysis is required.

Desired Range of Future Conditions

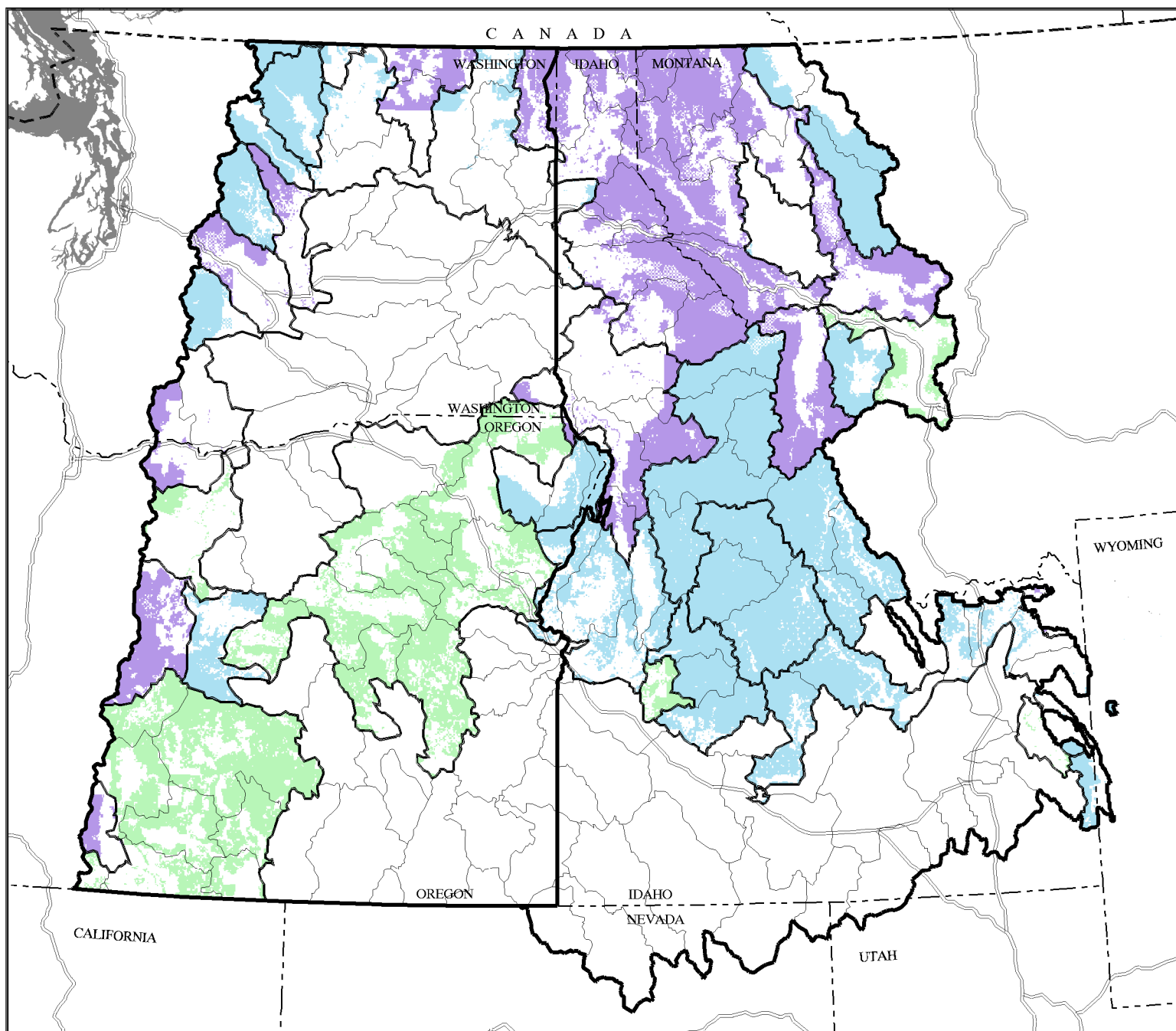
Under Alternative 2 forestlands and rangelands managed by the Forest Service or BLM continue to provide a mix of natural resource-based goods and services. Rangelands show improving conditions and trends as discussed in Alternative 1 desired future conditions. On forestlands not subject to timber management activities, desired future conditions are also the same as described in Alternative 1. On areas subject to timber management and/or areas within designated riparian areas in key/priority watersheds, some differences in desired range of future conditions from Alternative 1 apply.

The following desired range of future conditions applies to Forest Service- or BLM-administered lands identified in PACFISH and INFISH.

- ◆ Healthy and productive riparian and aquatic ecosystems provide high water quality.
- ◆ Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) are similar to that under which the riparian and aquatic ecosystems developed.
- ◆ Instream flows support healthy riparian and aquatic habitats, the stability and effective functioning of stream channels, and the ability to route flood discharges.
- ◆ Natural timing and variability of the water table elevation in meadows and wetlands is reached.
- ◆ Native and desired non-native plant communities in riparian zones are diverse and productive.
- ◆ Riparian vegetation provides an amount and distribution of large woody debris that is characteristic of natural aquatic and riparian ecosystems, provides adequate summer and winter thermal regulation within the riparian and aquatic zones, and helps achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which they developed.
- ◆ Riparian and aquatic habitats foster the unique genetic fish stocks that evolved within the specific geoclimatic region.
- ◆ Habitat supports populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Alternative 2 Management Emphases for the Project Area

Management Emphasis	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Conserve	43	1, 2, 6	33	2, 3
Conserve/Restore	26	5	NA	NA
Produce/Conserve	31	3, 4	67	1, 4, 5, 6



Map 3-4.
Alternative 2
Management Emphasis
for Forest Clusters

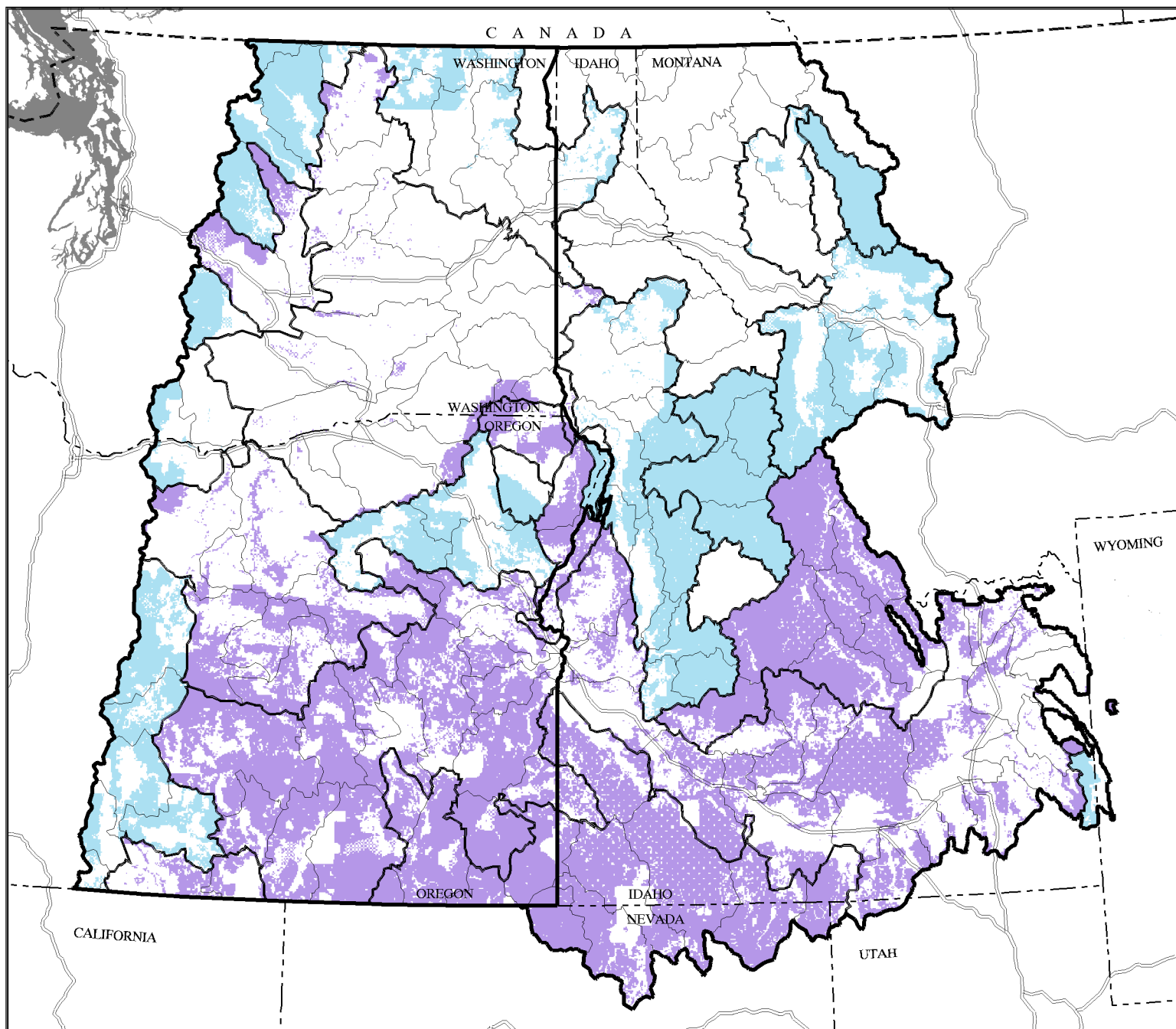
BLM and Forest Service
Administered Lands Only

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--------------------|--------------------|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



**Map 3-5.
Alternative 2
Management Emphasis
for Range Clusters**

*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- | | |
|--------------------|--------------------|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |

Features Common to Alternatives 3 through 7

Goals

Goals were the foundation for developing alternatives. They are broad general statements of intent that neither are quantified nor time-specific. A set of goals common to Alternatives 3 through 7 was developed because it is recognized that any ecosystem management strategy must simultaneously achieve a number of common conditions and outcomes. Goals were derived from consideration of the *Project Charter*, the Purpose and Need statement, and issues identified through the scoping process. All action alternatives address the goals to some degree and in varying amounts of time. Not all alternatives would meet the goals equally; some would be more successful at meeting a goal than others. The extent to which each goal would be met is part of the analysis of consequences discussed in Chapter 4.

Desired Range of Future Conditions

The condition of terrestrial and aquatic ecosystems in the project area reflects widely held social values and Indian trust responsibilities. Widely-held social values are most tangibly represented by federal statutes, such as the Endangered Species Act, Clean Air Act, Clean Water Act, National Forest Management Act, and the regulations developed for their implementation. In this document, the condition of terrestrial and aquatic ecosystems is addressed through the desired range of future conditions (DRFCs) that deal with forest and rangeland vegetation cover types, structures, disturbance patterns, and wildlife habitats; and with watershed processes, riparian conditions, and aquatic species habitats.

The desired range of future conditions is a vision of the long-term condition of the land, portrayed in this document as a range of conditions expected to result in 50 to 100 years if objectives are achieved.

The following desired range of future conditions apply to Alternatives 3 through 7. Additional conditions, specific to each alternative, that are

HELP?

See the User's Guide at the end of Chapter 3.

expected in 50 to 100 years are described in subsequent sections of this chapter.

Soils

- ◆ Most soils have at least minimal protective cover, soil organic matter, and coarse woody material (in woodlands and forests). Soils have adequate physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes in most soils function similarly to soils that have not been harmfully disturbed.
- ◆ Degradation of soil quality and loss of soil productivity is prevented.
- ◆ Soil hydrologic function and productivity in riparian areas is protected, preserving water quality buffering and regulation of nutrient cycling.
- ◆ Soil productivity is maintained and restored.

Forestland

- ◆ Vegetation and fuel management strategies reduce the risk of life and property loss from wildfire.
- ◆ In the *dry forest* potential vegetation group, stand density, species composition, structure, fuel loading and distribution, and duff depth are moving toward a characteristic fire regime. The majority of fires are nonlethal underburns, generally occurring on more gentle terrain and rocky areas at less than 25-year intervals. Some lethal fires, which kill the overstory, continue to occur in geographically windy areas or in low-productivity sites where trees rarely become tall enough for their crowns to survive flames. The smallest proportion of fires are of mixed severity.

Goals for Alternatives 3 through 7

- Goal 1 ~** Sustain and where necessary restore the health of forest, rangeland, aquatic, and riparian ecosystems.
- Goal 2 ~** Provide a predictable, sustained flow of economic benefits within the capability of the ecosystem.
- Goal 3 ~** Provide diverse recreational and educational opportunities within the capability of the ecosystem.
- Goal 4 ~** Contribute to recovery and delisting of threatened and endangered species.
- Goal 5 ~** Manage natural resources consistent with treaty and trust responsibilities to American Indian tribes.

- ◆ Dominant species in the *dry forest* group are resistant to low-intensity fires. Stands of ponderosa pine are pure or mixed with western larch, Douglas-fir or grand fir. The dry forest group is predominately open with little to no understory.
- ◆ In the *moist forest* potential vegetation group, mixed-severity fires are intermingled with surface and crown fires. Stand density, species composition, structure, fuel loading and distribution, and duff depth are moving toward that which is typically associated with the highly variable fire regime. Most fires are mixed severity at intervals ranging from 25 to 150 years. Nonlethal fires occur on benches and ridges, and fires lethal to the overstory occur on upland slopes.
- ◆ Dominant species in the *moist forest* group are resistant to low- and moderate-intensity fires. Stands of Douglas-fir, lodgepole pine, western larch, or ponderosa pine are pure or mixed with western white pine, grand fir/white fir, western hemlock/western red cedar or Engelmann spruce/subalpine fir.
- ◆ In the *cold forest* potential vegetation group, stand density, species composition, structure, fuel loading and distribution, and duff depth are moving toward a characteristic fire regime. Nonlethal underburns occur on benches and ridges where whitebark and lodgepole pine dominate. The lethal crown fire regime is found on moist to wet steep slopes. The most common fires are mixed severity, which usually occur intermingled

with nonlethal and lethal fires during one or a series of fire events, with a frequency ranging from 25 to 150 years.

- ◆ Dominant species in the *cold forest* group are somewhat resistant to low-intensity fires. Stands of lodgepole pine, Douglas-fir, or whitebark pine are pure or mixed with Engelmann spruce/subalpine fir, mountain hemlock, whitebark pine/subalpine larch, or aspen.

Terrestrial Species Habitats

- ◆ Habitats are suitable to maintain viable populations of listed and sensitive species.
- ◆ Natural Areas and habitats supporting high species endemism or biodiversity are present and contribute to viable populations.
- ◆ Healthy, productive and diverse populations and communities of plants and animals are maintained or restored.
- ◆ Viable populations are not limited by habitat conditions.

Rangeland

- ◆ The physical, chemical, and biological processes of rangeland ecosystems approach or meet their natural potential.
- ◆ The condition of rangeland soils promotes infiltration and moisture storage.
- ◆ The release of moisture from rangeland soils and landscapes promotes plant productivity and long duration flows of quality water.

- ◆ Rangeland soils support protective plant cover at levels near, or equal to, their potential to maintain hydrologic function.
- ◆ The composition and productivity of rangeland plant communities maintain levels of nutrient cycling and energy flow in the support of sustained ecosystem health.
- ◆ The spread of noxious weeds is contained and ecologically sound methods of control are applied throughout the region.
- ◆ Most rangeland seedings incorporate a diversity of plants that promote hydrologic function, nutrient cycling, and energy flow and meet other plan objectives. Most existing rangeland seedings are managed or treated, to maintain or promote a diversity of desirable species.

Aquatic Ecosystems and Riparian Areas

- ◆ Riparian areas and wetlands (both standing and moving water) are within the range of properly functioning condition.
- ◆ Water quality meets federal Clean Water Act requirements and EPA-approved state and tribal water quality standards and contributes to habitat quality and stream and lake conditions. Existing instream water uses and the level of water quality, necessary to protect the existing uses, are maintained and protected.
- ◆ High quality waters constituting state- or tribal-identified Outstanding Resource Waters are maintained and protected.
- ◆ There are fewer roads in riparian areas and uplands. Roads causing accelerated erosion have been reduced. Most riparian areas are stable and are subjected to natural streamflow and sediment regimes. In some areas, open roads are stable.
- ◆ Watersheds provide for the natural capture, storage, and safe release of water appropriate to soil type, climate, and landform.
- ◆ Riparian/wetland vegetation structure and diversity are making substantial progress toward controlling erosion, stabilizing stream banks, shading water areas, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to climate, geology, and landform.
- ◆ Stream channels and floodplains are functioning properly relative to the geomorphology (for example, gradient, size, shape, roughness, confinement, and sinuosity) and climate. Soils support native riparian and wetland vegetation to allow water movement, filtration, and storage.
- ◆ Surface and groundwater on Forest Service- or BLM-administered lands fully support, or are making substantial progress toward fully supporting, designated beneficial uses described in the state water quality standards.

Human Uses

- ◆ Forest Service- and BLM-administered lands efficiently provide a mix of economic and cultural benefits to people that balances local, regional, national, and international interests. The provision of benefits accounts for differences in social and economic relationships between these interests and the use of agency lands. Benefits are provided in type, amount, distribution, and regularity that is generally regarded as fair, well-reasoned, and conducive to predictable use. The mix of benefits supplied is responsive to changing public values and the comparative ability of agency-administered lands to supply goods and services relative to other suppliers. Benefits are produced in accordance with federal statutes and regulations, which most frequently address issues of efficiency, sustainability, supplying goods and services important to people, and consideration for local economic conditions.
- ◆ Economic activity is generated in rural communities, including private sector employment, government agency employment, income, number of recreation visits, and revenues shared with local governments.
- ◆ Because patterns of disturbance (fire, insect, disease, tree windthrow, flood) trend toward being less extreme and more predictable, they present fewer threats of loss of human life and property and less risk of degradation of environmental conditions valued by people, especially at the wildland-urban interface zone.

- ◆ State and federal resource management-related legal requirements are met.
- ◆ A broad range of recreational opportunities is available.
- ◆ Air quality complies with Clean Air Act requirements.
- ◆ Forest Service and BLM managers and planners use a mix of formal and informal mechanisms for including people in land use decisions, in the implementation of land use plans, and the monitoring of results. The Forest Service and BLM continually adapt mechanisms for including people to meet changing needs and conditions and improve effectiveness. Mechanisms provide opportunities for sharing knowledge, giving input, coordinating, and collaborating. The participation needs of tribal, local, and state governments, federal agencies, special interest groups, and the general public (local, regional, and national) are explicitly recognized and accommodated.

American Indians

- ◆ Tribal treaty rights and other federal trust responsibilities are met.
- ◆ Tribal governments are involved in federal agency planning, decision-making, and implementation of programs.
- ◆ Agencies recognize the tribes' right to self-determination and control of their resources and their relationship both among themselves and with non-Indian governments, organizations, and persons.
- ◆ There is an interconnected balance of physical landscape components, including upland terrestrial habitats, riparian areas, wetlands and clear, clean, cold water.
- ◆ Functional restoration of the ecosystem provides the capability to support harvestable levels of species of interest to the tribes.
- ◆ Culturally significant items and sites are understood and treated within the context of the culture that identifies and values them.

Alternative 3

Theme

Alternative 3 updates existing Forest Service and BLM land use plans in response to changing conditions (such as declining forestland and rangeland health, local economies at risk, and declining salmon runs), while minimizing changes to local plans and relying on local public needs and desires. Each National Forest or BLM District would emphasize local public input to determine a desired mix of uses, services, restoration and management actions consistent with ecosystem principles to incorporate into the land use plans. Direct involvement with other federal agencies, and state, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

The emphasis in this alternative is to make minimal modification to existing plans to allow them to be more effective, integrated, and consistent in the face of changed ecological conditions and increasing numbers of appeals and lawsuits. Only those priority conditions that most hinder the effectiveness of existing plans are addressed in this alternative and distinguish it from the No Action Alternatives (Alternatives 1 and 2). This alternative provides a broader dimension and more integrated management direction regarding priority large-scale issues that cross administrative boundaries than do Alternatives 1 or 2.

Design of Alternative 3

Alternative 3 emphasizes a mix of restoration strategies for management of Forest Service- and BLM-administered lands. See Maps 3-6 and 3-7.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 3 were selected.

In general, moderate levels of restoration activity are planned under this alternative (see following table). The primary focus of forest vegetation restoration is in Forest Clusters 3, 4, and 5 with a particular emphasis to restore vegetation to appropriate conditions on high priority sites in dry forest in Forest Cluster 5. Forest restoration is aimed at improving the range of composition, density, structure, and pattern, moving toward

conditions more appropriate for the forest type, and restoring more typical and predictable fire and other disturbance regimes. Management activities, expected to be used for restoration, include mechanical, fire, and harvest methods.

Rangeland vegetation restoration activity is planned at moderate (Range Clusters 1, 5, and 6) to moderately low levels (Range Clusters 2 and 4). The intent of restoration in range clusters is to maintain, improve, or increase biodiversity and productivity of native range plant communities through containment of noxious weeds, management of juniper, and increased use of prescribed fire.

Except for Forest Clusters 1 and 2, production is expected to occur across all forest clusters at relatively moderate levels, some resulting from restoration activities. Grazing management varies from low to high levels with the highest levels expected in Range Cluster 5. Production activities are expected to be accomplished in an environmentally appropriate manner, which supports achievement of objectives. Management of recreation, scenic integrity, and other resources and values is generally similar to Alternative 1, except where modified by direction protecting or promoting water, soil, aquatic, riparian and/or terrestrial resources.

Management of important species' habitat features within specified ranges is aimed at maintaining (or achieving) viable populations of vertebrate species.

Under Alternative 3, the aquatic strategy is based on objectives for the three sub-basin categories (see Map 2-36) and RCAs and RMO values from PACFISH and INFISH. Resource management direction is similar to PACFISH and INFISH. The aquatic conservation focus is to conserve Category 1 sub-basins, protect or restore habitat for wild chinook salmon and steelhead, native trout strongholds, and other listed and special status riparian dependent or aquatic species and protect or restore water quality to support beneficial uses. Potential ecosystem analysis areas are shown on Map 3-8.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following conditions would also be expected in 50 to 100 years under Alternative 3:

Terrestrial Ecosystems ~ Forestlands

Dry Forest Potential Vegetation Group

In the dry forest potential vegetation group, successional and disturbance processes are maintained through endemic insect and disease disturbances, vegetation management on high priority sites to re-establish dominance of single-story ponderosa pine, and fire.

There is a moderate abundance and persistence of mature and old single-story forest, dominated by stands resistant to low intensity fires, including ponderosa pine and western larch, with a moderate component of Douglas-fir and a minor component of grand fir. Stands are fairly well distributed with a mosaic of age classes (see Table 3-1).

Moist Forest Potential Vegetation Group

In the moist forest potential vegetation group, successional and disturbance processes are maintained through endemic insect and disease disturbances, windthrow often aided by root rot, vegetation management on high priority sites to re-establish western white pine, and fire.

There is a moderate abundance and persistence of young forests consisting of western white pine, western larch, and ponderosa pine with a minor component of grand fir. Stands are distributed with a mosaic of age classes (see Table 3-1).

Cold Forest Potential Vegetation Group

In the cold forest potential vegetation group, successional and disturbance processes are maintained through endemic and epidemic insect and disease disturbances. Vegetation management on high priority sites is used to re-establish whitebark pine and fire.

There is a moderate component of young forest consisting of seral whitebark pine along with Engelmann spruce/subalpine fir. Stands are distributed with large-patch mosaics of age classes (see Table 3-1).

In dry and moist forest potential vegetation groups not in the rural/wildland interface zone, where an emphasis is to manage for timber production, two to three fire intervals are skipped in underburning (non-lethal) and mixed behavior fire regimes in some areas. This will

Alternative 3 Management Emphases for the Project Area

Management Emphasis	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Conserve	NA	NA	8	2
Conserve/Restore	28	1, 6	25	3
Restore	54	2, 3, 5	19	5
Restore/Produce	18	4	48	1, 4, 6

accumulate small-diameter trees in the understory and moderate closure of larger-diameter overstory trees. In crown fire regimes, one to two fire intervals are skipped in some areas to accumulate moderate-diameter trees in the overstory with scattered large residual trees.

Forest Wildlife Habitat

The needs of forest-dependent wildlife species are met by the presence of the necessary structures and composition, ecological processes, and ecosystem functions. Most habitats ensure long-term evolutionary potential of native species. Forestlands contain habitat attributes of old forests. Habitats of endemic or

disjunct species and centers of biodiversity for rare plant and animal species are given consideration to meet these species needs. Natural areas with high species endemism or biodiversity are present and contribute to viable populations and the delisting or recovery of threatened or endangered species. Habitats are managed that will prevent listing of species given special consideration by land management agencies. Amounts and distribution of habitat attributes are increased where needed to meet the requirements of endemic species and species with large home ranges. Some blocks of old forest connect areas of similar vegetation. Options for evolutionary processes are maintained at the edge of species ranges for wide-ranging species. Human activities are at levels that allow sufficient useable habitat for all species to be represented and well distributed, although species densities may be variable. Management activities are dispersed, except in areas following major disturbances such as large fires and insect infestations. In many forestlands, some roads are closed (seasonally or permanently). New roads are located to achieve desired wildlife habitat conditions.

Table 3-1. Desired Seral Stages at the Landscape Level for Alternative 3

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature ¹ & Old ² Single	Other ³
Distribution (percentage of PVG)					
Dry	15-25	30-45	10-20	10-30	0-15
Moist	20-30	45-60	10-20	5-10	
Cold	25-35	40-50	10-20	5-15	1-2
Shade-Intolerant Species (percentage of seral stages)					
Dry	70-80	60-70	55-70	75-90	
Moist	65-75	55-65	50-60	55-70	
Cold	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

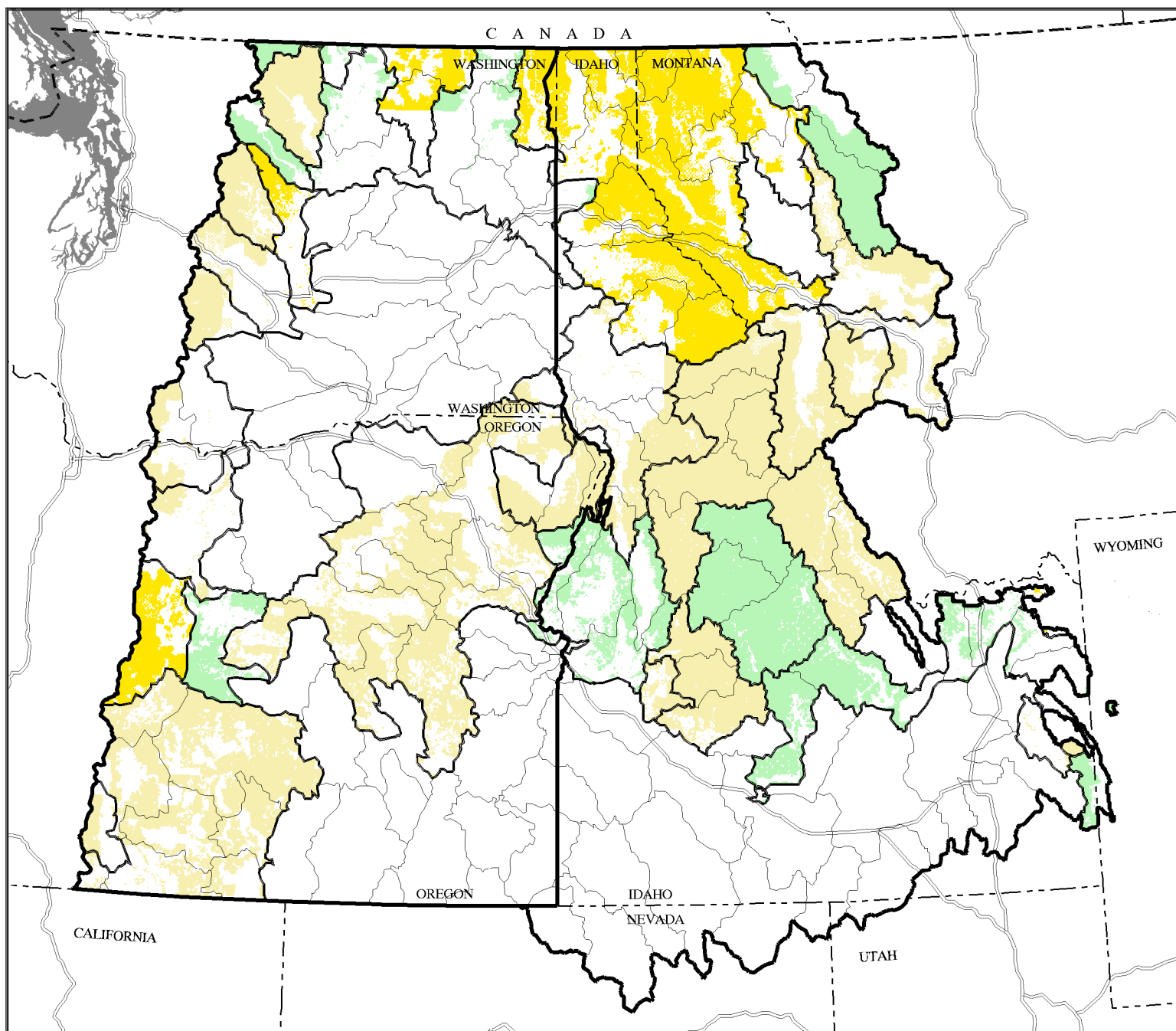
² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

PVG = Potential vegetation group.

Terrestrial Ecosystems ~ Rangelands

Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native and exotic perennial grasses. There is a slight management emphasis on maintaining a grass-dominated plant community in the shrublands, although forbs and shrubs are a substantial part of the plant community. Most seedlings have been diversified by the addition of various forb and shrub species. New infestations of noxious weeds, especially when located in vegetation types highly susceptible to invasion, are controlled, but some existing large infestations remain and continue to spread along their boundaries. Control that results in some reduction of existing large infestations is prioritized at a site-specific



Map 3-6.
Alternative 3
Management Emphasis
for Forest Clusters

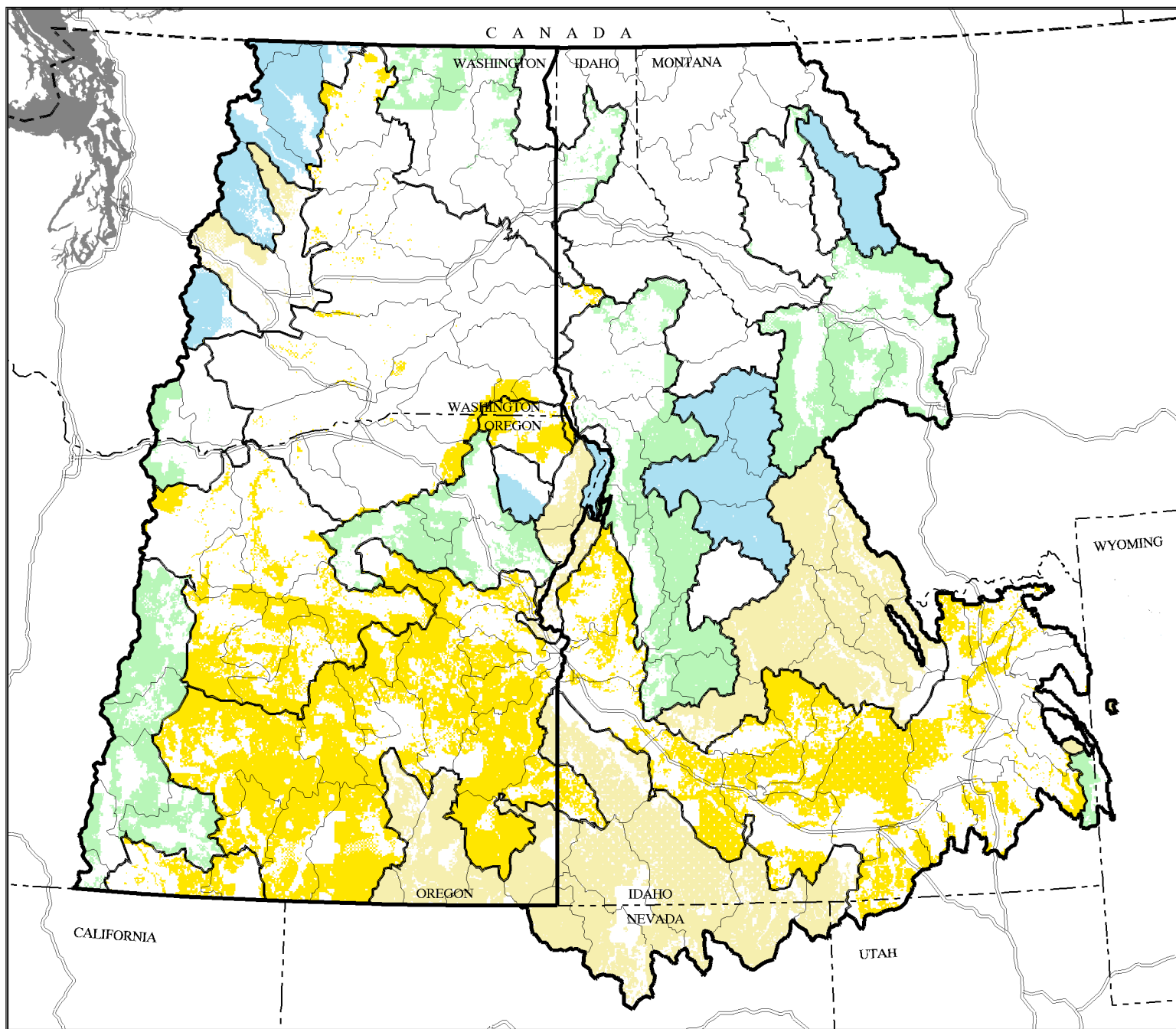
*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



**Map 3-7.
Alternative 3
Management Emphasis
for Range Clusters**

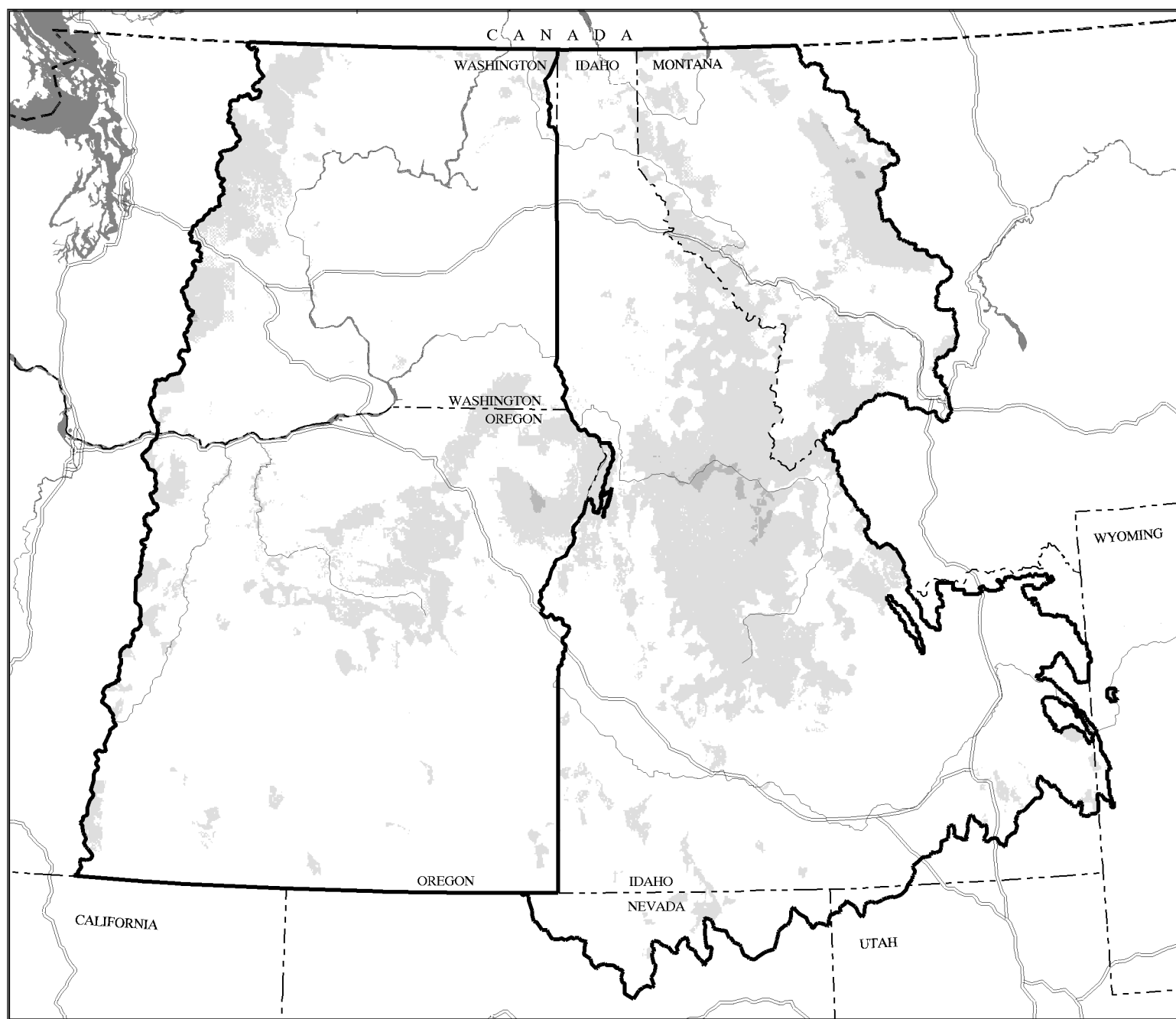
*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



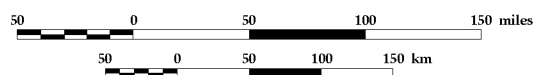
- | | |
|--|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-8.
Alternative 3
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|-----------------|
| Analysis Areas | Major Rivers |
| Analysis required for human-ignited prescribed fire | Major Roads |
| | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or in stronghold subwatersheds, bull trout fringe subwatersheds, subwatersheds containing wild populations of steelhead or ocean-type or stream-type chinook salmon, or Snake River salmon, or bull trout High Priority Watersheds.

level and directed by local input, especially for species that are problematic on a project area-wide level (yellow starthistle, diffuse knapweed, spotted knapweed, and leafy spurge).

Western juniper and conifers are being reduced by various treatments on rangelands. New invasions as well as existing juniper and conifer dominated sites are being treated.

Prescribed burning and prescribed natural fire is apparent, although the burning is not continuous and is prescribed as a mosaic. Altered sagebrush steppe is maintained at existing levels with emphasis on preventing the spread of cheatgrass to adjacent areas. Greenstripping and other fire breaks are apparent along roads and along the altered sagebrush steppe boundaries.

Dry Grass Potential Vegetation Group

Forty to sixty percent of the fires in this group are nonlethal, burning in herbaceous vegetation at less than 25-year intervals. The remaining fires are lethal, or mixtures of nonlethal and lethal, causing mortality of overstory shrubs or conifers. Fifty to seventy percent of the area is dominated by native grasses and forbs with minimal conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group

Forty to sixty percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Five to twenty percent of the area is dominated by native grass and forb communities. The remaining area is dominated by dense shrub communities with declining herbaceous layers, by annual grasses, or by seedings of exotic grasses and other plants.

Cool Shrub Potential Vegetation Group

Fifty to seventy percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Ten to thirty percent of the area contains mixtures of perennial grasses and forbs. Conifers are dominant on less than 20 percent of the area.

Rangeland Wildlife Habitat

Rangelands have the necessary structure and composition, ecological processes, and ecosystem functions to meet most needs of federal and state listed and sensitive rangeland-dependent wildlife species. Native rangeland

habitats have been restored where possible. Natural Areas and areas of high species endemism or biodiversity are present and contribute to viable populations, but gains in numbers of species are moderate. Vegetation is appropriate for the site with multiple age classes of shrubs and grass being common. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Blocks of similar habitats are fairly well connected with areas of similar vegetation. Human activities are at a level that allows most species to maintain a desired distribution, but species densities may be low. In many rangeland areas, roads are closed or located to achieve the desired resource conditions. In some situations, human activities require seasonal restrictions in selected habitats.

Aquatic Ecosystems

Watershed Processes

Riparian areas in Proper Functioning Condition are managed to maintain at least that condition within their site potential and with no downward trends. Moderate- or large-diameter tall trees are apparent within riparian areas. Most riparian areas are connected to streams and uplands, unfragmented by roads and openings, and free of barriers to species migration. On rangelands, most riparian area soils are vegetated with native deep-rooted plants and shrubs. Riparian woodlands are increasing in forested areas. Wetlands are stable and common across the lower gradient valley bottoms.

Forested streams in Category 2 sub-basins and rangeland and forested streams in portions of Category 3 sub-basins are moderately productive and habitat is becoming complex and diverse, supporting native aquatic species. Instream, bank, and overhead cover, and structure provided by large wood and willows, are moderate and increasing. Large deep pools in lower gradient streams are fairly common. Rangeland streams and forested streams in portions of category 3 sub-basins are moderate in productivity, and have habitat that is mostly complex and diverse, supporting aquatic species. Instream, bank, and overhead cover, and structure provided by large wood and willows, are moderate.

Minor portions of the landscape have minimal protective soil cover, organic matter, and coarse woody material.

Roads in riparian areas are infrequent and stable. Few road corridors from new roads are apparent. The landscape is generally fragmented in appearance.

Aquatic Species Habitat

Water quality and aquatic habitat are moving towards watershed, riparian, and aquatic habitat goals within Category 2 and portions of Category 3 sub-basins. Restoration strategies are implemented on nearly all high-risk sites within Category 2 sub-basins, allowing recovery of watershed, riparian, water quality, and aquatic conditions characteristic for the geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered aquatic species populations to stabilize or expand. Major river corridor habitat and water quality conditions are improving.

Water quality provides for stable and productive riparian and aquatic ecosystems.

Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) are similar to that under which the riparian and aquatic ecosystems developed.

Instream flows support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges.

Natural timing and variability of the water table elevation in meadows and wetlands is reached.

Native and desired non-native plant communities in riparian zones are diverse and productive.

Riparian vegetation (a) provides an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; (b) provides adequate summer and winter thermal regulation within riparian and aquatic zones; (c) helps achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

Riparian and aquatic habitats foster the unique genetic fish stocks that evolved within the specific geoclimatic region.

Habitat supports populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations, and contributes to the viability of riparian-dependent communities.

Human Uses and Values

Social and economic systems are minimally affected by adjustments or updates to Forest Service or BLM land use plans.

Local public needs and desires continue to influence levels of commodity and non-commodity outputs.

Customary uses continue and stability improves for the participant customers (firms, ranches, etc.).

Reductions in commodity outputs are minimized and reflect either changes in ecosystem health or minimum levels needed to achieve compliance with applicable laws and regulations.

Payments to county and city governments continue and generally are stable within a normally accepted range.

Alternative 4

Theme

Alternative 4 is designed to aggressively restore ecosystem health through active management, the results of which resemble endemic disturbance processes including insects, disease, and fire. The alternative focuses on short-term vegetation management to improve the likelihood of moving towards or maintaining ecosystem processes that function properly in the long-term. Vegetation management is designed to reduce risks to property, products, and economic and social opportunities that can result from large epidemic disturbance events. Direct involvement with other federal agencies, and state, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

The priority in this alternative is placed on forestland, rangeland, and watershed health, assuming that healthy streams, wildlife populations, and economic and social benefits will follow. Actions taken to achieve desired conditions are designed to produce economic benefits whenever practical. A wide variety of management tools are available under this alternative.

Design of Alternative 4

Restoration strategies are applied in all clusters, except Forest Cluster 1 and Range Cluster 2, which both have a Conserve/Restore emphasis. See Maps 3-9 and 3-10.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 4 were selected.

Emphasis is on a high level of restoration where the dry and/or moist forests are dominant. The cold forest group generally has a moderate level of restoration.

Restoration on rangelands is generally moderate to moderately high. The emphasis is on active restoration of all three rangeland potential vegetation groups. See table below.

Much of the short-term forest outputs will result from restoration activity. Forage production is generally at moderate levels, except for Range Clusters 2 and 3, which have low levels. On rangelands, restoration activities are expected to lead to improved range productivity which may lead to some opportunity for increased grazing. Management of recreation, scenic integrity, and other resources and values is encouraged but may be affected by restoration or conservation requirements.

In Alternative 4, restoration is aimed at achieving or maintaining a moderate to high amount of habitats and habitat features within desired ranges.

The aquatic strategy for Alternative 4 features objectives for three sub-basin categories and RCAs and RMO values developed from information collected for the *Scientific Assessment*. Resource management direction is similar to Alternative 3. The aquatic strategy is aimed at conservation of Category 1 sub-basins; maintenance of water quality; and restoration, maintenance, and protection of riparian-dependent and aquatic species habitat. Sub-basin review is used to strategically prioritize watersheds for Ecosystem Analysis which provides the context and coordination to accomplish protection or restoration of aquatic and riparian resources and water quality. This alternative places emphasis on a high rate of watershed restoration to improve stream, riparian, soil and upland processes and functions.

Map 3-11 shows areas under Alternative 4 where ecosystem analysis is potentially required. Watershed restoration is moderate for Forest Clusters 3, 4, and 5 and high for Forest Clusters 1 and 2; riparian restoration is at moderate levels for all clusters. In riparian-wetland areas, achievement and maintenance of Proper Functioning Condition or better is expected. Road density reduction is generally moderate, except in Forest and Range Clusters 1 and 5 (low road density reduction in Forest Cluster 1 and Range Cluster 5; high in Forest Cluster 5 and Range Cluster 1).

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following conditions would also be expected in 50 to 100 years under Alternative 4.

Terrestrial Ecosystems~ Forestlands

Dry Forest Potential Vegetation Group

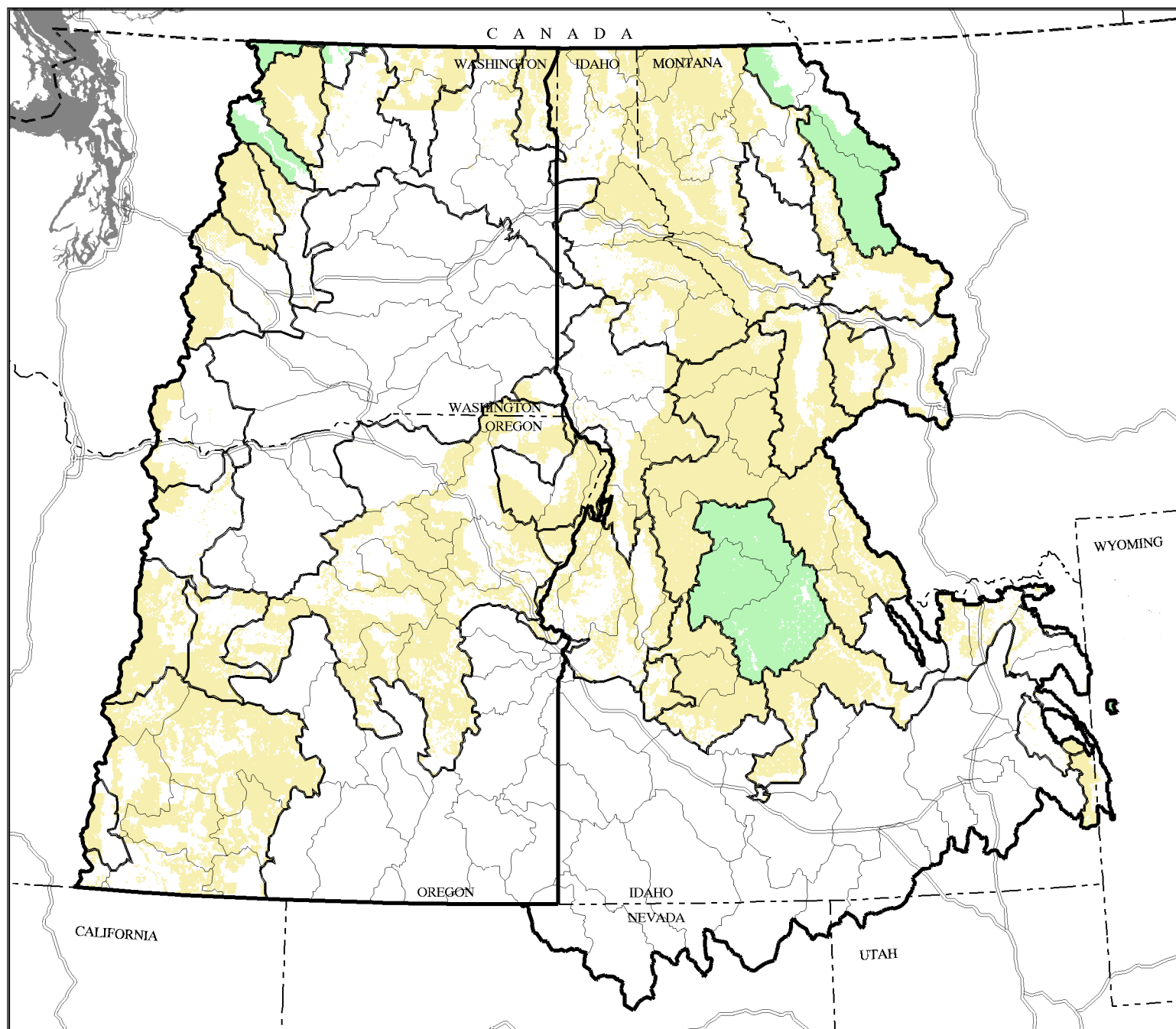
In the dry forest potential vegetation group, early successional stages are maintained and disturbance processes are restored through aggressive vegetation management, endemic insect and disease occurrences, and fire.

There is an abundance and persistence of mature and old single-story forests, that are resistant to low intensity fires, dominated by ponderosa pine and western larch, with a moderate component of Douglas-fir and a minor component of grand fir. Stands are well distributed with a mosaic of age classes (see Table 3-2).

Moist Forest Potential Vegetation Group

In the moist forest potential vegetation group, early successional stages are maintained and disturbance processes are restored through aggressive vegetation management, endemic insect and disease occurrences, windthrow (often aided by root rot), and fire.

There is an abundance and persistence of mature and old forest dominated by Douglas-fir, lodgepole pine, and ponderosa pine in the single-story structural stage. Seral western white pine dominates the young forest structural stage. Stands are well distributed with a mosaic of age classes (see Table 3-2).



Map 3-9.
Alternative 4
Management Emphasis
for Forest Clusters

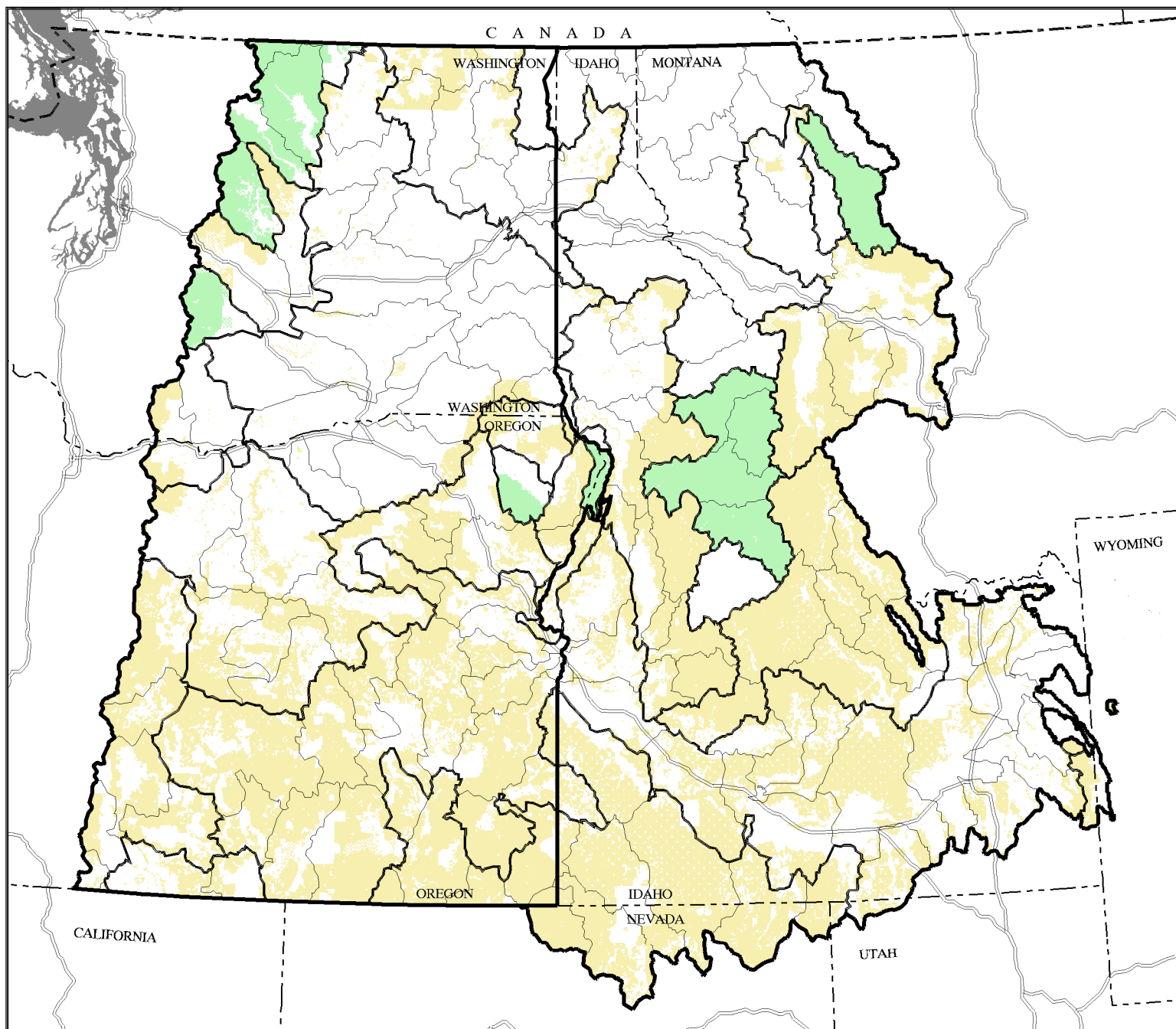
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--------------------|--------------------|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-10.
Alternative 4
Management Emphasis
for Range Clusters

*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--------------------|--------------------|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |

Cold Forest Potential Vegetation Group

In the cold forest potential vegetation group, early successional stages and disturbance processes are maintained through endemic insect and disease occurrences, vegetation management, and fire.

There is an abundance and persistence of mature and old forest dominated by lodgepole pine and Douglas-fir in the multi-story structural stage. Young forest stages are dominated by seral whitebark pine with a moderate component of Engelmann spruce/subalpine fir. Stands are distributed in large patch mosaics of various age classes (see Table 3-2).

Forest Wildlife Habitat

The needs of forest-dependent wildlife species are met by vegetation structure and composition, ecological processes, and ecosystem functions. Habitats ensure long-term evolutionary potential of native species. Habitat attributes of old forests are abundant. Habitats of endemic and disjunct species and centers of biodiversity for rare plant and animal species are being managed to meet these species requirements. Natural Areas with high species endemism or biodiversity are common and contribute to viable populations and the delisting of threatened or endangered species. Habitats prevent the need for listing of species given special consideration by land management agencies. Management is designed to increase amounts and distribution of habitat attributes where needed to be sufficient to meet the needs of endemic species and species with large home ranges. Blocks of old forest habitats are large and well connected with similar forest types. Options for evolutionary processes are maintained at the edge of all species ranges. Human activities are at levels that allow most species to be adequately distributed in forested environments. In the long term, management activities are dispersed and infrequent; in the short term, management

Table 3-2. Desired Seral Stages at the Landscape Level for Alternative 4

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature ¹ & Old ² Single	Other ³
Distribution (percentage of PVG)					
Dry	10-20	30-40	10-20	20-30	0-15
Moist	20-35	40-50	15-25	5-10	
Cold	20-30	45-55	10-20	5-15	1-2
Shade-Intolerant Species (percentage of seral stages)					
Dry	70-80	65-75	60-75	85-95	
Moist	65-80	60-70	60-70	65-80	
Cold	60-70	50-60	45-55	75-85	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

PVG = Potential vegetation group

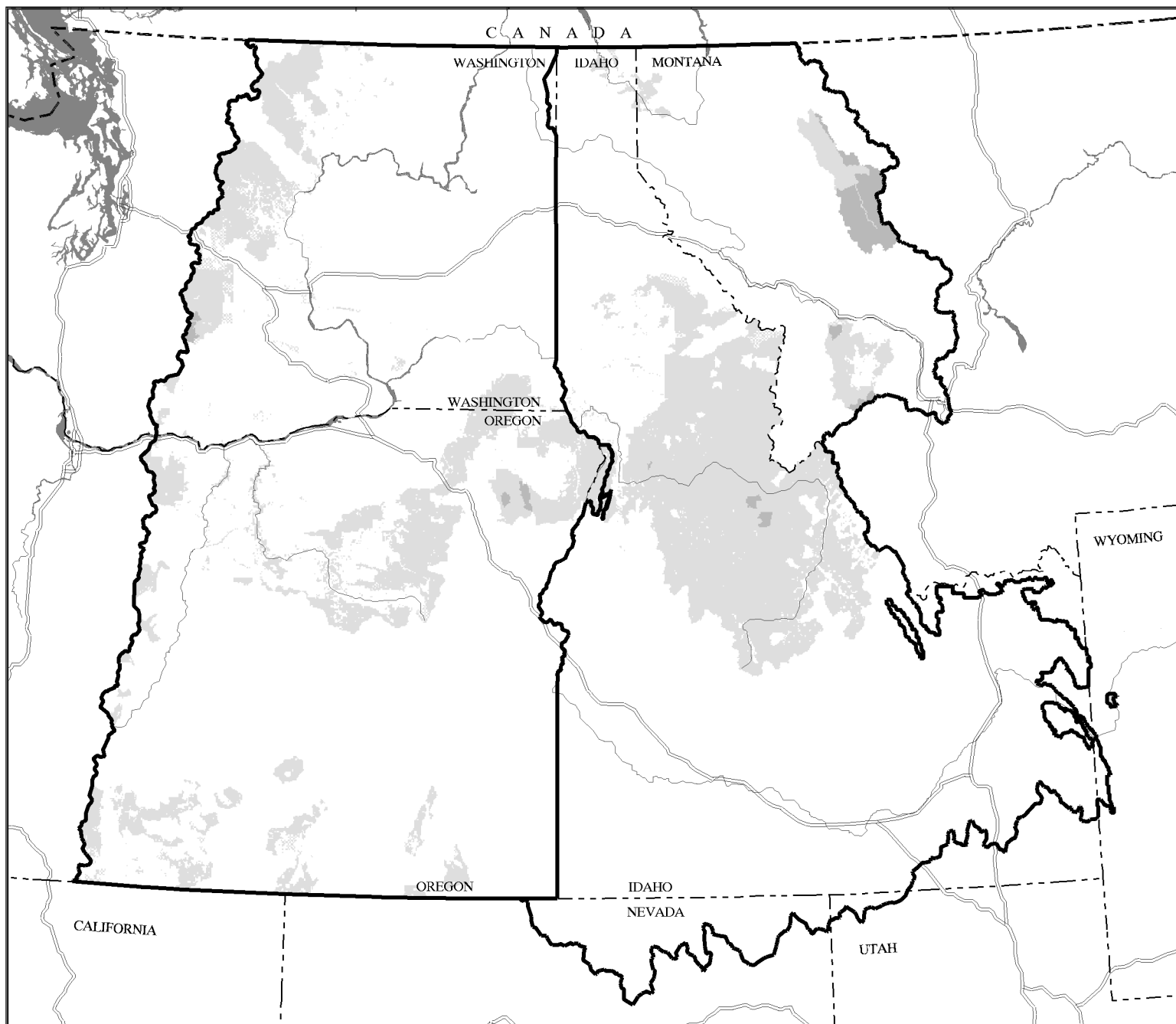
activities are common. In many forest areas, many roads are closed (seasonally or permanently). New roads are located to achieve desired wildlife habitat conditions.

Terrestrial Ecosystems ~ Rangelands

Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native grasses with management emphasis on maintaining a diverse native plant community. Most seedings have been diversified by the addition of various native grasses, forbs, and shrubs, and have been converted to native plants where desirable. New infestations of noxious weeds are not common across the landscape and existing large infestations are slowly declining.

Alternative 4 Management Emphases for the Project Area

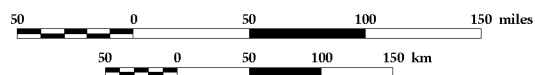
Management Emphasis	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Conserve/Restore	10	1	8	2
Restore	90	2, 3, 4, 5, 6	92	1, 3, 4, 5, 6



Map 3-11.
Alternative 4
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|-----------------|
| Analysis Areas | Major Rivers |
| Analysis required for human-ignited prescribed fire | Major Roads |
| | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species.

Western juniper-dominated sites are rare across the rangelands. The exception to this is rock outcrops, ridges, mesas, or other areas not prone to fire, which typically have shallow soils with little accumulation of fine fuels. Some areas have diverse plant communities with low densities of western juniper as well as a full complement of native understory shrubs, grasses, and forbs. Conifers do not dominate on rangelands.

Prescribed burning and prescribed natural fire have maintained the diverse, mosaic shrub steppe plant communities as well as the grassland communities that are subject to conifer encroachment. Most of the altered sagebrush steppe consists of diverse perennial plant communities, with the grass components dominated by both native and exotic perennial grasses. Greenstripping and other fire breaks are still apparent along roads and along the remaining altered sagebrush steppe boundaries.

Dry Grass Potential Vegetation Group

Sixty to eighty percent of the area is dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group

Fifty to seventy percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Ten to twenty-five percent of the area is dominated by native grass and forb communities. The remaining area is dominated by closed shrub communities with declining herbaceous layers, by seedlings of exotic and native grasses and other plants, and in a small area by annual grasses and noxious weeds.

Cool Shrub Potential Vegetation Group

Sixty to eighty percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Fifteen to forty percent of the area contains mixtures of perennial grasses and forbs. Closed canopy sagebrush and conifers dominate the remaining area.

Rangeland Wildlife Habitat

Rangelands have the necessary structure and composition, ecological processes, and ecosystem function to meet most needs of federal and state listed and sensitive rangeland-dependent wildlife species. The distribution of different amounts and ages of shrubs, grassland,

and woodland are approaching desired levels in a mosaic pattern. Rehabilitation or restoration of native shrub communities are accomplished where site potential permits to enhance wildlife habitat. Natural Areas and areas of high species endemism or biodiversity are common and contribute to viable populations, but gains in numbers of species is moderate. Vegetation is appropriate for the site with multiple age classes of shrubs and grass being common. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Areas are large and connected with other areas of similar vegetation to maintain species distribution and densities that are closely associated with rangeland habitats. Human activities allow species to maintain expected distribution, but some species densities may be low due to human activities. In many areas roads are closed and new roads are located to reduce habitat fragmentation and reduce human disturbance; road densities are low in many areas. Blocks of similar habitat are large and connect with areas of similar vegetation.

Aquatic Ecosystems

Watershed Processes

Riparian areas are resilient, diverse, and functioning within their site potential. Riparian areas in Proper Functioning Condition are managed to maintain at least that condition with no downward trends, and there is an annual increase in the number of areas functioning at risk that show an upward trend toward Proper Functioning Condition. Less resilient and more sensitive areas are recovering. Moderate- or large-diameter tall trees are fairly frequent in riparian areas. Riparian areas are covered by protective vegetation and are generally connected with their streams and upslopes.

Most soils have protective cover, adequate levels of soil organic matter, and coarse woody material distributed in varying sizes and types. Soils also have adequate physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes in soils function similarly to soils that have not been harmfully disturbed.

Roads in riparian areas are few and stable. Roads exist in riparian areas only under the following circumstances: where needed for major public transportation thoroughfares, where they do not cause problems to aquatic and

riparian resources, or where there are no other practical alternatives. Some corridors from new roads are apparent, but roads in sensitive landscapes are few and stable. There is moderate-to-strong evidence of human management activity across the landscape.

Aquatic Species Habitat

Restoration strategies are implemented on nearly all high risk sites within Category 2 and portions of Category 3 sub-basins, promoting recovery of watershed, riparian, water quality and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered aquatic species populations to stabilize and expand into previously occupied habitat. Native aquatic species population strongholds are increasing across the project area. Major river corridor conditions allow most aquatic species to achieve their full life cycles.

Water quality provides for stable and productive riparian and aquatic ecosystems.

Sediment regimes are appropriate to geoclimatic setting. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Hydrologic regimes in streams, lakes, and wetlands are appropriate to the geoclimatic setting. Important elements of the hydrologic regime include those processes necessary to sustain proper channel form, and riparian, aquatic, and wetland habitats, and to allow proper patterns of sediment, nutrient, and wood routing. This includes the timing, magnitude, duration, and spatial distribution of peak, high, and low flows.

Instream flows support healthy riparian and aquatic habitats, stability and effective function of stream channels, and the ability to route flood discharges.

Natural timing and variability of the water table elevation in meadows and wetlands is reached.

Native and desired non-native plant communities in riparian zones are diverse and productive.

Riparian vegetation (a) provides an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; (b) provides adequate summer and winter thermal regulation within the riparian and aquatic zones;

(c) helps achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

Riparian and aquatic habitats foster the unique genetic fish stocks that evolved within the specific geoclimatic region.

Habitat supports viable populations of native plant, invertebrate, and vertebrate aquatic and riparian-dependent species, including threatened or endangered species, which are well distributed within their historical ranges.

Habitat supports harvestable populations of native aquatic and riparian-dependent species of commercial, cultural, and recreational significance.

Habitat supports desired recreational fishing opportunities for non-native species where they will not further erode native species status or prevent attainment of objectives for native species.

The distribution, diversity, and complexity of watershed and landscape-scale features are maintained and restored to ensure protection of the aquatic systems to which species populations and communities are uniquely adapted.

Spatial and temporal connectivity are maintained and restored within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact strongholds. These connections shall provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Human Uses and Values

Social and economic systems have adjusted (in some locations grown) to the changed amounts and product mix of commodity and non-commodity outputs. Enhanced forestland, rangeland, riparian and aquatic ecosystems enable individuals and firms to obtain social and economic benefits from sustained levels of management activities and restoration actions.

Local public needs and desires are reconciled with the federal agencies' ecosystem restoration needs and opportunities.

Payments to city and county governments continue within an acceptable range based on local conditions and need for restoration.

Alternative 5

Theme

This alternative emphasizes production of goods and services at the subregional level consistent with the principles of ecosystem management. Biological capability and economic efficiency are used to determine relative priority uses for an area, rather than local demands and traditional uses. Areas that are best able to produce products, goods or services, or desired conditions are targeted to do so within the ecological capability of the area. Other uses also are expected to exist when they do not conflict with or diminish the priority uses. While a full range of conditions, products, and services may not be provided in all localities, the desired range of conditions, products, and services will be met on a regional (project area) basis. Direct involvement with other federal agencies, and state, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

In this alternative, both EIS Teams (Eastside and UCRB) identified areas across the project area best able to produce products, goods, services, or desired conditions, within the ecological capability of the land. Five resource priorities were considered: timber, livestock, aquatic resources, wildlife, and recreation. The assumption used in building this alternative was that each forest and range cluster has a primary management priority and some have a secondary priority (see table below). Other uses are likely to occur, but any conflicts would be resolved in favor of the priority uses.

Design of Alternative 5

Because of the unique approach undertaken in Alternative 5, each forest and range cluster has both management emphasis (see Maps 3-12 and 3-13) and management priority (see Maps 3-14 and 3-15).

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 5 were selected.

As seen in following table, Forest Clusters 1 and 2 and Range Clusters 2 and 3 promote a conservation or conservation/restoration

management emphasis and recreation and/or aquatic and/or wildlife resource management priority. Generally under these approaches, disturbance is allowed to play a more natural role in maintaining or achieving ecological integrity. Under the Conserve emphasis, the level of management activity is generally low, although watershed restoration and prescribed fire are at moderate levels. Prescribed fire is the primary tool in maintaining appropriate vegetative conditions for the given environment.

Most of the other clusters focus on production and/or restoration, often with a timber and/or livestock grazing priority. Where timber and livestock production are a primary priority, natural large-scale disturbances will be reduced to protect high resource values.

In areas with wildlife, aquatic, and recreation as primary priorities (Forest Clusters 1, 2, 3, and 6), the intent is to protect, maintain and/or restore habitats for native and desired non-native animals and plants and ecological processes and functions.

In forest clusters where timber and livestock production are priorities, habitat is designed (similar to Alternative 3) and activities mitigated to maintain minimum habitat components for species viability. Where wildlife is a secondary priority, habitat components may be maintained above those necessary for minimum viable populations.

In the timber and/or livestock priority areas, the aquatic strategy is to conserve remaining fish strongholds and high quality habitat and water, while producing high levels of timber and forage. Map 3-16 shows areas under Alternative 5 where ecosystem analysis is potentially required.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following conditions would also be expected in 50 to 100 years under Alternative 5:

Terrestrial Ecosystems ~ Forestlands

Dry Forest Potential Vegetation Group

In the dry forest potential vegetation group, early successional stages and disturbance processes are maintained through vegetation management, endemic insect and disease disturbances, and fire.

There are either large patches dominated by young forest and mature and old multi-story forests within timber priority areas, or a mosaic of age classes composed of ponderosa pine and Douglas-fir in other priority areas (see Table 3-3).

Moist Forest Potential Vegetation Group

In the moist forest potential vegetation group, early successional stages and disturbance processes are maintained through intensive vegetation management, endemic insect and disease disturbances, windthrow often aided by root rot, and fire.

There are either large patches of young forest and mature and old multi-story forest within timber priority areas, or a mosaic of age classes in the other priority areas (see Table 3-3). Seral western white pine dominates the young forest structural stage.

Table 3-3. Desired Seral Stages at the Landscape Level for Alternative 5

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature ¹ & Old ² Single	Other ³
Distribution (percentage of PVG)					
Dry (W)	10-25	35-45	15-25	10-20	0-15
Dry (O)	15-25	30-45	10-20	10-30	
Moist (W)	20-30	45-60	10-25	2-7	
Moist (O)	20-30	45-60	10-20	5-10	
Cold (W)	25-35	40-50	10-20	5-15	1-2
Cold (O)	25-35	40-50	10-20	5-15	
Shade-Intolerant Species (percentage of seral stages)					
Dry (W)	80-90	65-75	65-75	75-90	
Dry (O)	70-80	60-70	55-70	75-90	
Moist (W)	65-80	60-70	60-70	55-70	
Moist (O)	65-75	55-65	50-60	55-70	
Cold (W)	55-65	50-60	55-65	90-100	
Cold (O)	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

PVG = Potential Vegetation Group

(W) = within timber priority areas;

(O) = outside of timber priority areas.

Cold Forest Potential Vegetation Group

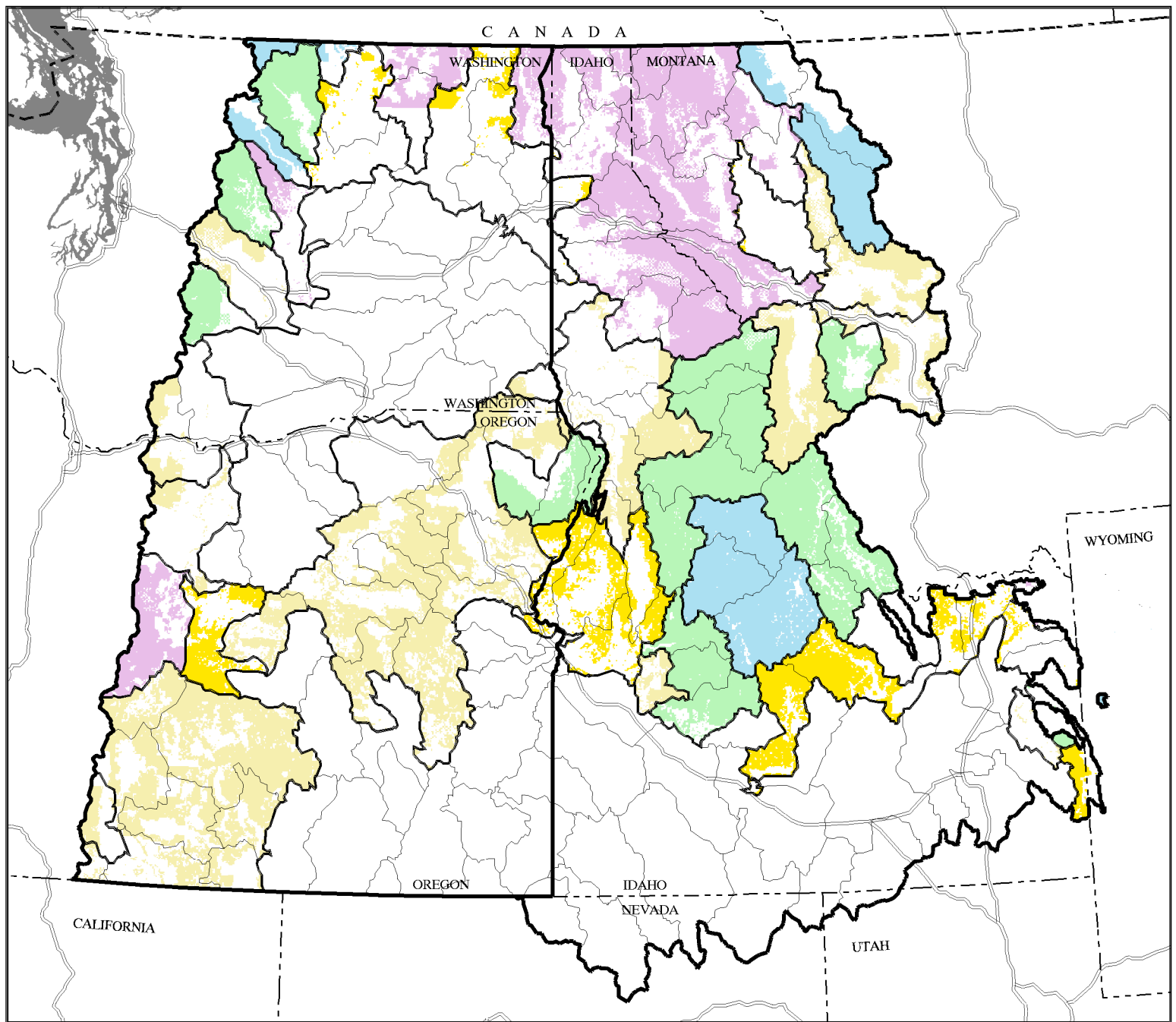
In the cold forest potential vegetation group, early successional stages and disturbance processes are maintained through endemic and epidemic insect and disease disturbances, and minimal vegetation management.

There is a high abundance and persistence of mature and old forest dominated by lodgepole pine and Douglas-fir in the multi-story structural stage. The young forest stages have a moderate component of seral whitebark pine and Engelmann spruce/subalpine fir. Stands are well distributed in a mosaic of age classes (see Table 3-3).

In dry and moist forest potential vegetation groups outside the rural/wildland interface, where there is an emphasis to manage for timber production, underburns and/or thinning is used to minimize stand-replacing and mixed severity wildfires. The fire regime can be lengthened in young forests to allow establishment of fully stocked stands with moderate crown closure. In cold potential vegetation groups, underburns and/or thinning can be used to produce moderate to large diameter trees.

Forest Wildlife Habitat

Forested *wildlife priority areas* have the necessary forest structure and composition, ecological processes, and ecosystem function to meet the needs of *all species* associated with forest communities. Habitat is maintained to assure species distribution and densities associated with forest habitats. Habitats ensure long-term evolutionary potential of native species. Forested land contains habitat attributes of old forests which connect with areas of similar vegetation. Habitats are managed to prevent listing of species given special consideration by land management agencies. Habitats of endemic or disjunct species and centers of biodiversity for rare plant and animal species are being managed to meet these species needs. Human activities are at levels that allow sufficient useable habitat for most species to be represented and well distributed in forested environments. Habitat maintains options for evolutionary processes at the edge of species ranges. Management activities occur primarily in areas of major disturbances. Roads are few.



Map 3-12.
Alternative 5
Management Emphasis
for Forest Clusters

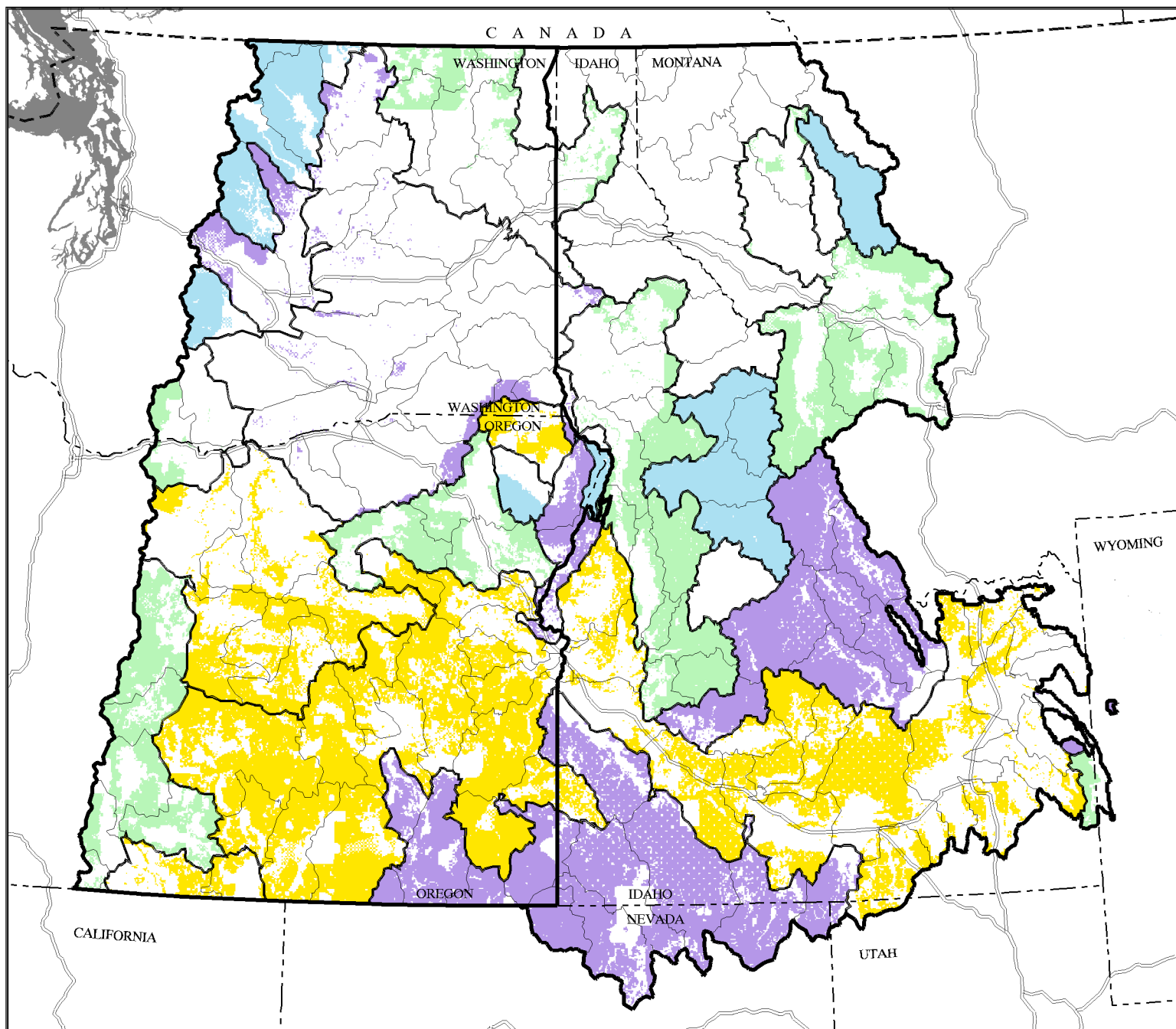
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-13.
Alternative 5
Management Emphasis
for Range Clusters

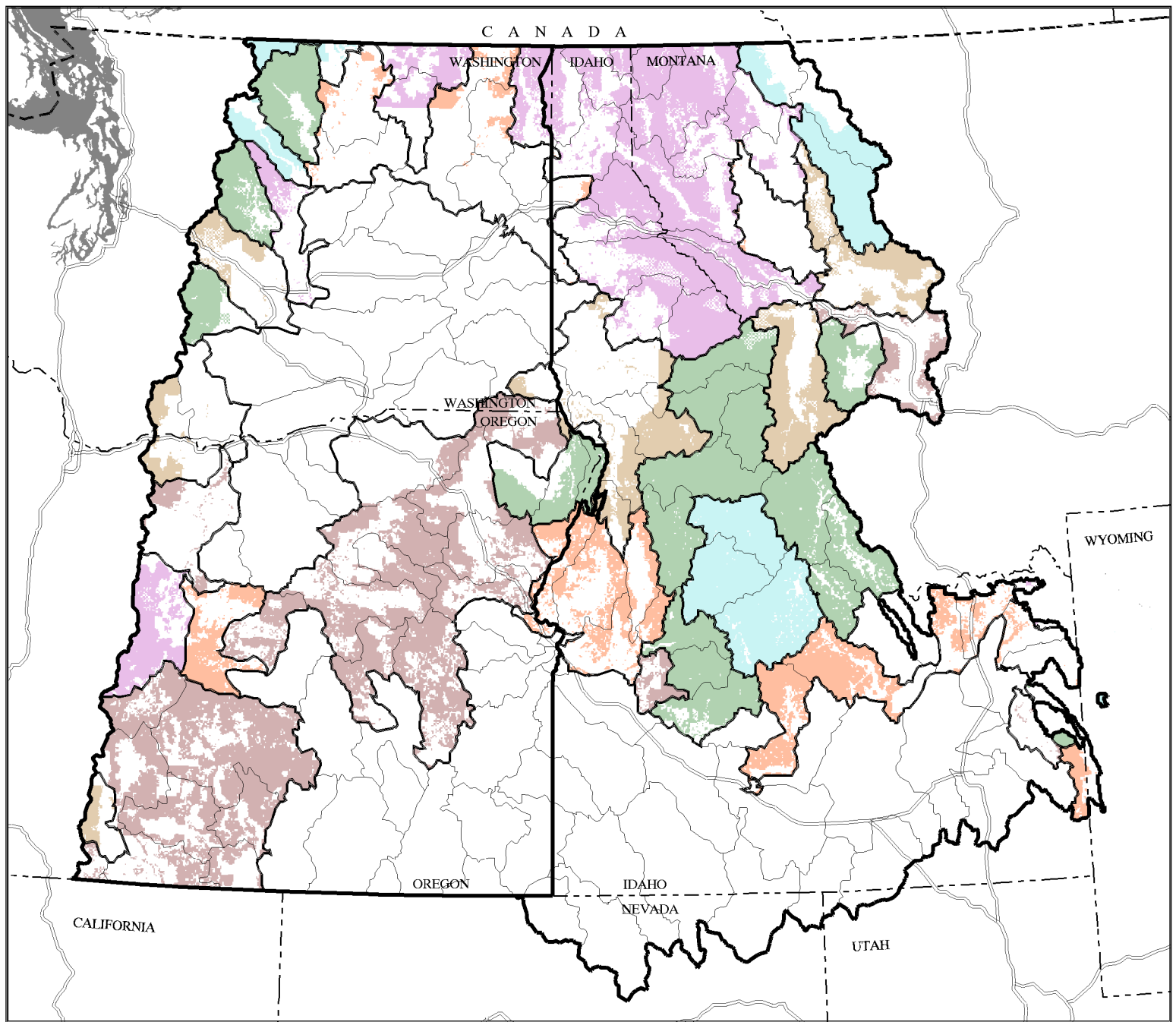
*BLM and Forest Service
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |

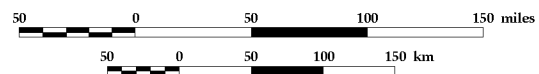


Map 3-14.
Alternative 5
Primary and Secondary Priorities
by Forest Cluster

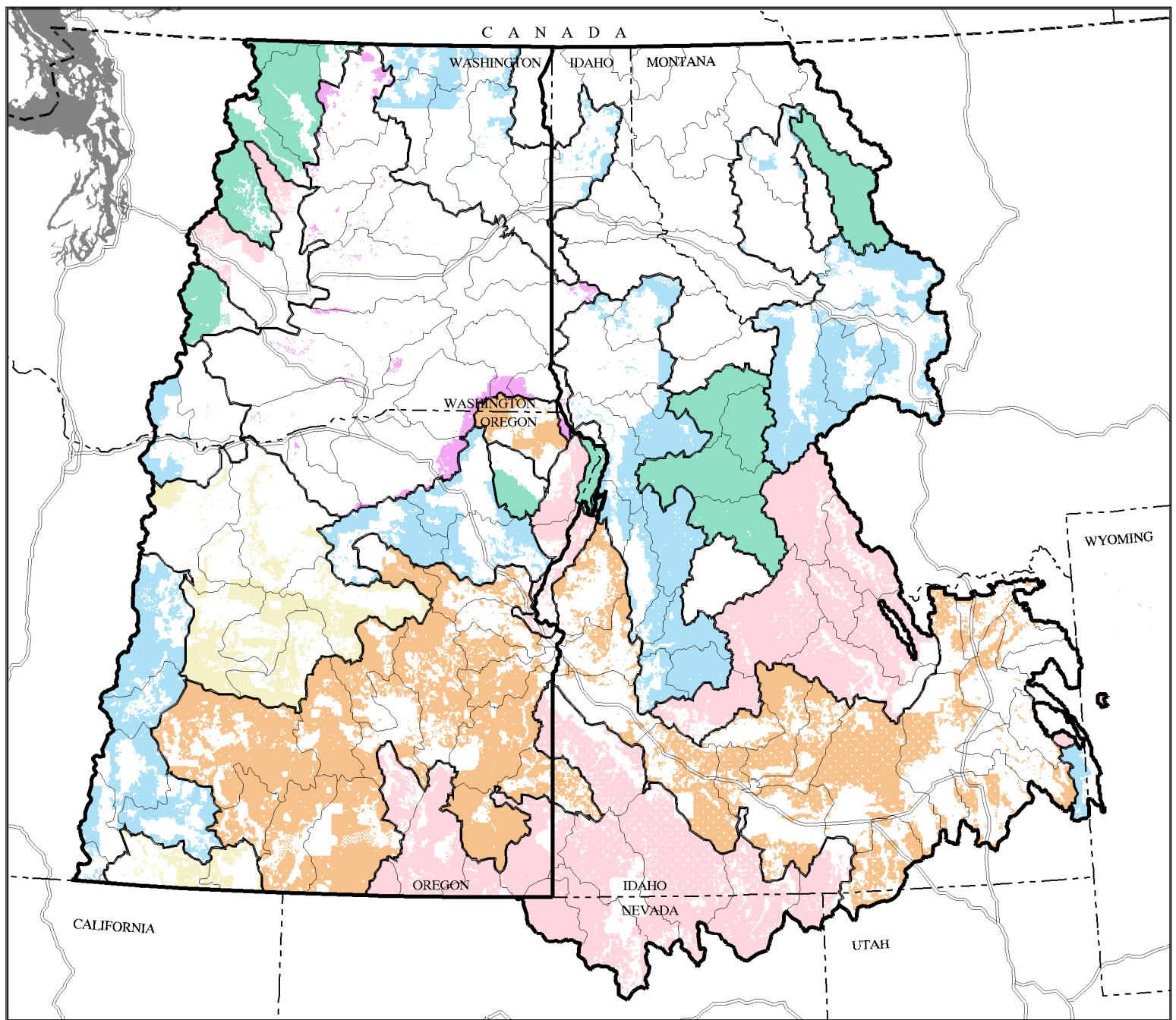
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|-------------------------------|--------------------|
| Primitive Recreation/Aquatics | 4th HUC Boundaries |
| Aquatics/Recreation | Major Roads |
| Aquatics/Timber | EIS Area Border |
| Timber/Wildlife | Cluster Boundary |
| Timber/Livestock | |
| Wildlife/Recreation | |

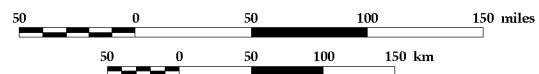


Map 3-15.
Alternative 5
Primary and Secondary Priorities
by Range Cluster

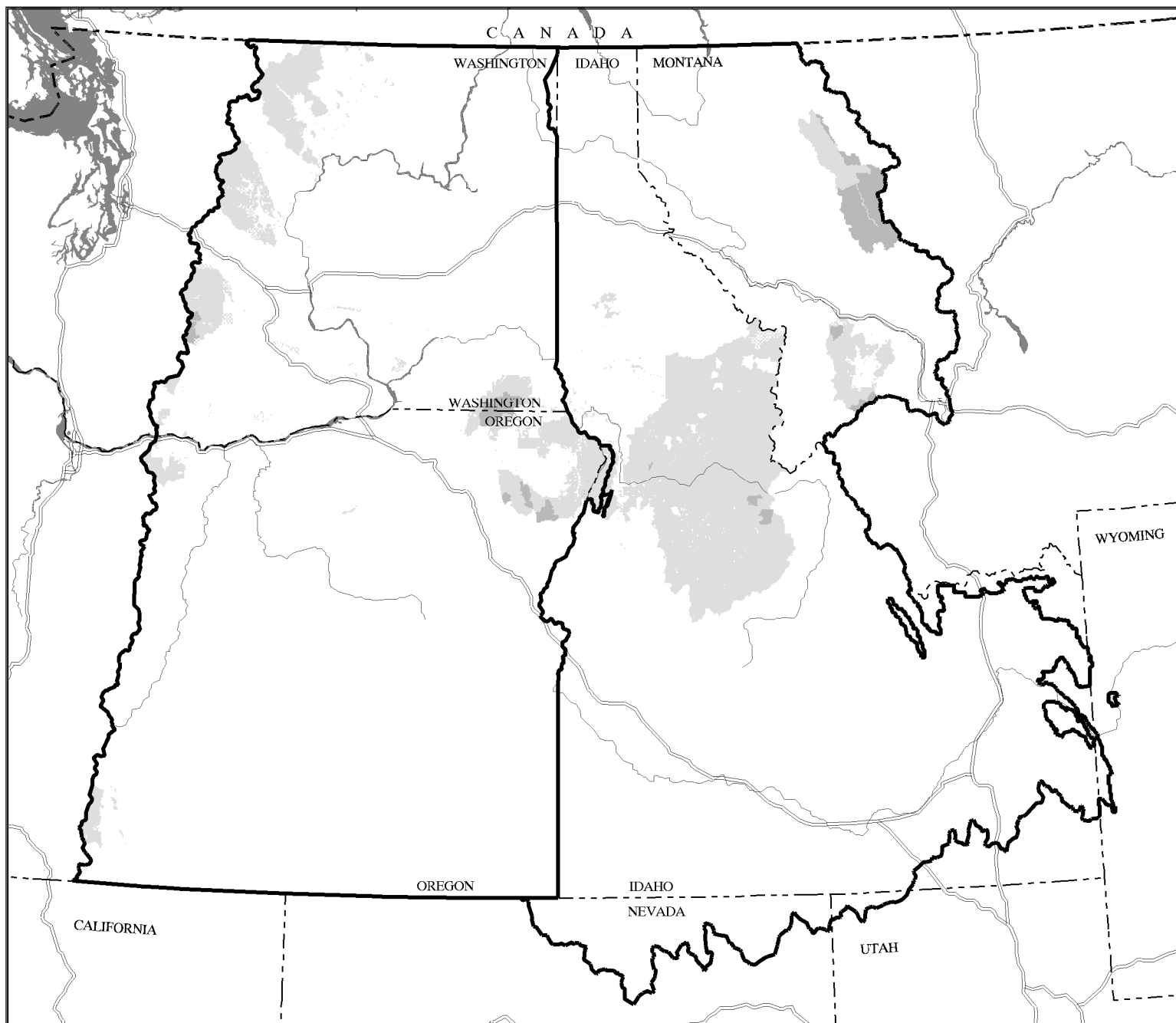
*BLM and Forest Service
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



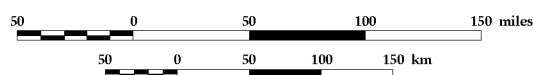
- | | |
|--|---|
| Livestock/Timber | 4th HUC Boundaries |
| Recreation/Aquatics | Major Roads |
| Recreation/Wildlife | EIS Area Border |
| Wildlife | Cluster Boundary |
| Livestock/Recreation | |
| Livestock/Wildlife | |



Map 3-16.
Alternative 5
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|-----------------|
| Analysis Areas | Major Rivers |
| Analysis required for human-ignited prescribed fire | Major Roads |
| | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required in areas outside of timber and livestock priority areas before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species.

In forest potential vegetation groups, *other priority areas* have the necessary forest structure and composition, ecological processes, and ecosystem function to meet the needs of *most forest*-dependent wildlife species, but species densities are low. Forested land contains habitat attributes of old forests which are mostly connected with areas of similar vegetation. Human activities are at levels that allow most species to maintain a desired distribution in forested environments. Management activities occur primarily in areas of major disturbances.

Terrestrial Ecosystems ~ Rangelands

Within Livestock Priority Areas

Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native and exotic perennial grasses. The management priority is to maintain a grass-dominated plant community in the shrubland types for livestock production. Forbs and shrubs are a minor, but significant, part of the plant community. Most seedlings have been diversified by the addition of various forb and shrub forage species. New infestations of noxious weeds are not common across the landscape and existing large infestations are slowly declining.

Western juniper-dominated sites are rare across the rangelands. The exception is rock outcrops, ridges, mesas, or other sites not prone to fire which typically have shallow soil areas with little accumulation of fine fuels. Conifers are not dominators on rangeland areas such as dry grasslands.

Prescribed burning and prescribed natural fire have maintained the more grass-dominated communities although the burning is not continuous and is prescribed as 'mosaic'. Altered sagebrush steppe has been converted to diverse perennial plant communities that provide forage production. Greenstripping and other fire breaks are apparent along roads and along the altered sagebrush steppe boundaries.

Outside Livestock Priority Areas

The general description is the same as in Alternative 4.

Dry Grass Potential Vegetation Group

Seventy to ninety percent of the area within livestock priority areas, and up to 80 percent of the area outside livestock priority areas, are dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group

Thirty to fifty percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Twenty-five to forty-five percent of the area within livestock priority areas is herbaceous-dominated, as is 10 to 25 percent of the area outside these areas. The remaining areas are dominated by desirable exotic and native plant seedlings, annual grasses or noxious weeds, and a small amount of closed shrub communities with declining herbaceous layers.

Alternative 5 Management Emphases and Priorities for the Project Area

	% of All Forest Cluster	Forest Cluster No.	% of All Range Cluster	Range Cluster No.	Forest Cluster Priority	Range Cluster Priority
Management Emphasis						
Conserve	10	1	7	2	Recreation/Aquatics	Recreation/Aquatics
Conserve/Restore	15	2	25	3	Aquatics/Recreation	Recreation/Wildlife
Restore	39	3, 5	NA	NA	Aquatics/Timber/ Livestock	NA
Restore/Produce	18	6	35	1, 6	Wildlife/Recreation	Livestock/Timber/ Wildlife
Produce	18	4	NA	NA	Timber/Wildlife	NA
Produce/Conserve	NA	NA	33	4, 5	NA	Wildlife/Livestock/ Recreation

Cool Shrub Potential Vegetation Group

Forty to sixty percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Forty to sixty percent of the area within the livestock priority areas, and 10 to 25 percent of the area outside these areas contains mixtures of perennial grasses and forbs. Conifers are dominant on less than five percent of the area within livestock priority areas, and on less than 30 percent of the land outside livestock priority areas.

Rangeland Wildlife Habitat

Within rangelands, wildlife priority areas have the necessary structure and composition, ecological processes, and ecosystem function to meet the needs of federal and state listed and sensitive rangeland-dependent wildlife species. The distribution of different amounts and ages of shrubs, grassland, and woodland is approaching desired levels in a mosaic pattern. Rehabilitation or restoration of native bunchgrass is accomplished where site potential permits. Management activities to control exotics are frequent and concentrated. Blocks of habitats are more connected with areas of similar vegetation. Human activities allow most species to maintain a desired distribution. Roads are few.

Other priority areas in rangelands have the necessary structure and composition, ecological processes, and ecosystem functions to meet needs of all federal and state listed and special status species dependent on rangeland habitat. Vegetation is appropriate for the site, with multiple age classes of shrubs and grass being common. Rehabilitation or restoration of native shrub and grass communities has been accomplished. Management activities to control exotic plants are frequent. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Areas are fairly well connected with other areas of similar vegetation to maintain species distribution and densities. Human activities are at a level that allows sufficient useable habitat for most species to be represented and maintain expected distribution, but some species densities may be low. In many areas roads are closed (seasonally or permanently). New roads are relocated to increase habitat quality by reducing human disturbance; road densities are variable.

Aquatic Ecosystems

Watershed Processes

The desired range of future conditions for riparian areas, streams, lakes, soil, and road corridors in aquatic priority areas, is similar to the desired range of future conditions for Alternatives 4 and 6.

There is no downward trend in riparian condition and function in timber priority areas. Small to large trees provide watershed protection. Most riparian areas are covered with vegetation. Most areas are connected to their streams and upslopes but a few (the more sensitive and less responsive areas) are fragmented and isolated. Most streams are moderate in productivity and have habitat that is diverse and complex. Structure is provided by small diameter wood in smaller streams. Large, deep pools are apparent in the larger lower gradient streams.

Most portions of the landscape in timber priority areas have protective soil cover, organic matter, and coarse woody material; most biomass is stored in small to large diameter trees and as litter. Vegetation growth and hydrologic function are not impaired. There is some evidence of openings from old and new road corridors across the landscape. Moderate amounts of the landscape are open or partially open and next to the road corridors. Riparian vegetation does not appear separate and disconnected from upslope vegetation.

There is no downward trend in riparian condition and function in livestock priority areas. Most riparian areas are covered by vegetation. Most areas are connected to stream channel, floodplains, and subsurface flow networks. Woodlands are apparent. Most streams are moderate in productivity, and have habitat that is mostly complex and simple. Structure is provided by vegetation and shrubs. Large, deep pools are apparent in the larger lower gradient streams. Most streams are becoming narrow and deep.

Large portions of the landscape in livestock priority areas have protective soil cover and organic matter, mostly in the form of above-ground biomass and deep rooted plants. Soil and hydrologic function is not impaired.

Riparian areas in recreation priority areas are somewhat fragmented where recreation is concentrated and developed. Small openings are infrequent. In dispersed use and undeveloped areas, riparian areas are resilient and functioning within conditions characteristic of that valley bottom setting and vegetation type. Streams are generally productive and somewhat diverse. Areas of concentrated or developed use have reinforced stream banks interspersed with vegetated and resilient stream banks. Structure is apparent; substrate tends to be of various sizes in areas of concentrated and dispersed use. Habitat is fairly diverse and complex in concentrated use areas, and increasingly complex in areas of less use. Large, deep pools are frequent.

New roads in some riparian areas within recreation priority areas are evident and stable, but overall roads in riparian areas are few. Old and new road corridors blend into the landscape as much as possible.

Aquatic Species Habitat

Restoration strategies have been implemented on nearly all high risk sites within aquatic and recreation priority areas, allowing recovery of watershed, riparian, water quality, and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered aquatic species populations to stabilize and expand into previously occupied habitat. Native aquatic species population strongholds are increasing. Major river corridor conditions have improved to allow most species to achieve their complete life cycles.

Water quality provides for stable and productive riparian and aquatic ecosystems.

Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) are similar to that under which the riparian and aquatic ecosystems developed.

Instream flows support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges.

Natural timing and variability of the water table elevation in meadows and wetlands is reached.

Native and desired non-native plant communities in riparian zones are diverse and productive.

Riparian vegetation (a) provides an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; (b) provides adequate summer and winter thermal regulation within the riparian and aquatic zones; (c) helps achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

Riparian and aquatic habitats foster the unique genetic fish stocks that evolved within the specific geoclimatic region.

Habitat supports populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Human Uses and Values

Social and economic systems have adjusted to changes in the location, amounts, and product mix of commodity and non-commodity outputs.

Where land capability is more suited to support ecological values (such as threatened or endangered species), land allocations emphasize the economic and social values of protected biological resources, and economic and social systems have adjusted accordingly.

Alternative 6

Theme

This alternative emphasizes an adaptive management approach to restore and maintain ecosystems and provide for the social and economic needs of people. While much knowledge of natural resource management has been acquired through experience and research, ecosystems are complex and knowledge of the functions and processes that make up ecosystems is limited. Management strategies will be adjusted based on information gained from continued research and monitoring of ecological, social, and economic conditions and from direct input from other federal agencies, and state, county, and tribal governments.

This alternative is similar to Alternative 4 but takes a slower, more cautious approach; implies the use of experimental processes, local research, and extensive monitoring; is expected to take longer to reach desired conditions; has built-in uncertainty over which management actions will prove to be the most effective. Restoration activities that are well studied and well understood are pursued as actively under Alternative 6 as under Alternative 4.

Under this alternative, actions are implemented on a broad-scale basis when previous monitoring results or scientific research suggest that the actions are effective in achieving desired outcomes. Priorities for restoration are generally in high hazard or high risk areas with high or moderate potential for success.

Design of Alternative 6

Alternative 6 has more acres with a Conserve/Restore management emphasis and less in a Restore emphasis than Alternative 4 for both forest and range clusters (see Maps 3-17 and 3-18). Adjustments in management approaches and implementation are expected as a result of intensive application of the learning process. In some cases, restoration techniques and their effects are well known and would proceed on a pace similar to Alternative 4. See the following table.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 6 were selected.

Within forests, restoration is emphasized at high levels in all potential vegetation groups in Forest Cluster 5, and in the moist forest potential vegetation group in Forest Cluster 4. Restoration is emphasized at moderate levels in the other forest clusters. As in other alternatives, the intent of restoration is to achieve appropriate disturbance and

successional processes and move forests toward desired conditions. The use of fire is generally the preferred approach in restoration of forest vegetation. Other resource activities are at levels similar to Alternative 4.

On rangelands, overall restoration of vegetation is generally at moderate levels (Range Clusters 1, 2, and 3) and at low levels in Range Clusters 4, 5, and 6. Direction for Range Clusters 4 and 6 also calls for improved rangelands. The approach is to restore degraded areas associated with more productive sites and begin the process of improving composition, increasing diversity and achieving functional range processes.

Because of the more cautious approach, production activities are at lower levels than Alternative 4. Timber harvest is expected at moderate levels in Forest Cluster 4 and relatively low in all others. Restoration activities should also contribute toward producing additional outputs. Livestock management is anticipated at relatively moderate levels in Range Clusters 1, 4, and 6 and at low levels in other clusters. As in other alternatives, some increased level of grazing may result from restoration and improved range conditions.

The overall approach to species habitat management is the same as Alternative 4. The intent is to restore and maintain, within desired ranges, a relatively moderate to high level of habitats and habitat features that are important for animals and plants.

The aquatic strategy for Alternative 6 (see Map 3-18a) is the same as Alternative 4 except Alternative 6 places greater emphasis on sub-basin review and Ecosystem Analysis. The aquatic strategy focus is to conserve Category 1 sub-basins, protect or restore habitats for federally listed, proposed, and candidate riparian-dependent or aquatic species, native trout fringe and stronghold habitats, and water

Alternative 6 Management Emphases for the Project Area

	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Management Emphasis				
Conserve/Restore	28	1, 6	52	2, 3, 5
Restore	72	2, 3, 4, 5	48	1, 4, 6

quality to support beneficial uses, and protection, restoration, or maintenance of other riparian-dependent or aquatic species habitat to prevent future federal listing. This alternative has similar watershed restoration levels as Alternative 4.

Watershed restoration is directed towards improving stream, riparian, soil and upland integrity and function.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements that are common to all action alternatives, Alternative 6 is portrayed by a desired range of future conditions that is similar to that of Alternative 4. Acknowledging that in the short term (less than 10 years), conditions are likely to look different under Alternative 6 than they do under Alternative 4, it is anticipated that in the long term, conditions would look similar to those described under Alternative 4. Therefore, for the desired range of future conditions specific to Alternative 6, see Alternative 4.

Alternative 7

Theme

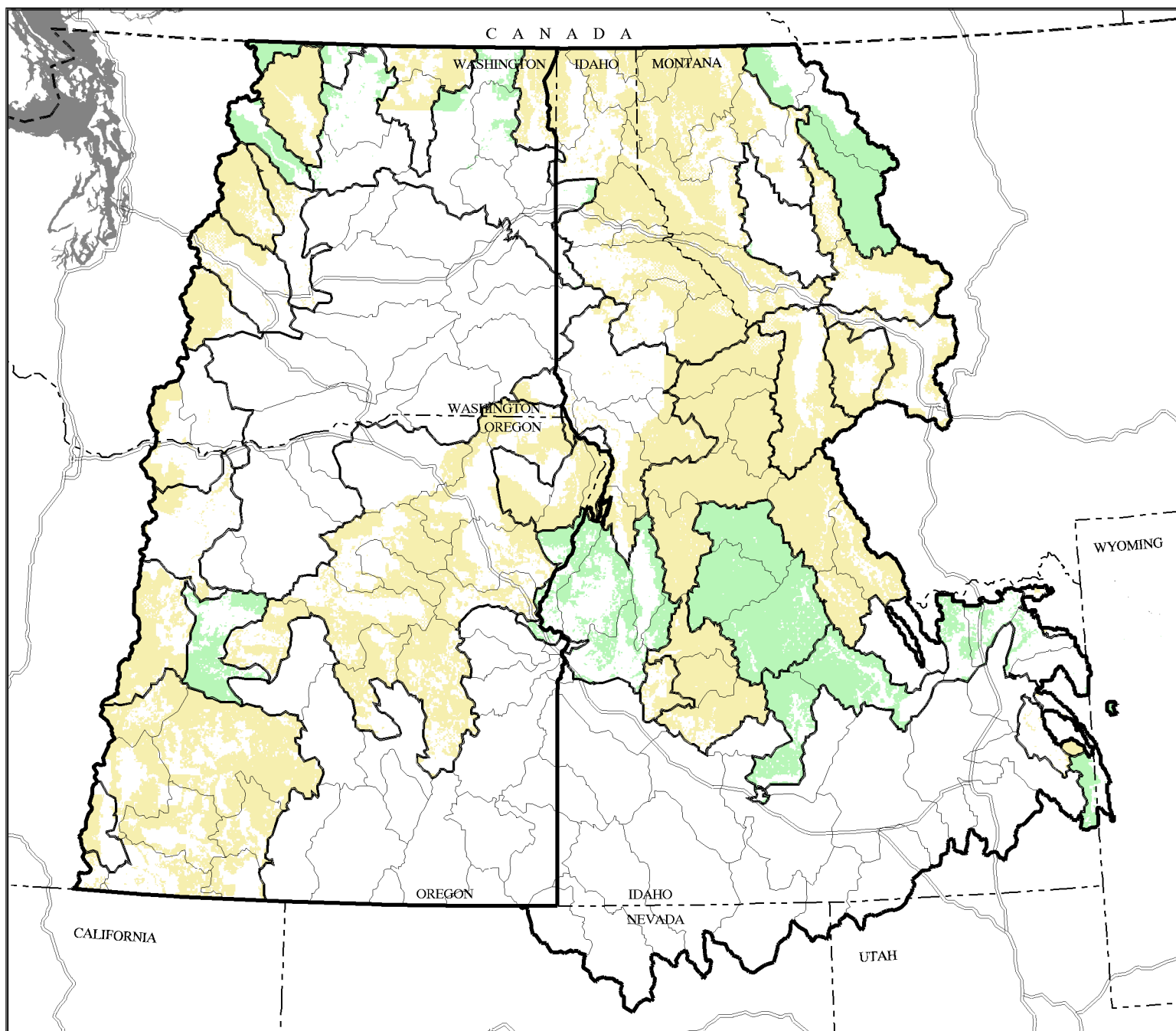
This alternative emphasizes reducing risk to ecological integrity and viable populations by establishing a system of reserves on lands administered by the Forest Service or BLM (see Map 3-19). Reserves are delineated to include each of the representative vegetation types and are large enough to contain the most likely disturbance events. The level of human use and management is very low within the reserves. Ecological disturbance events are expected and occur naturally within the reserves. When disturbance events occur, actions are taken to reduce the likelihood of the event extending beyond the boundary of the reserve. Most restoration activities occur on lands managed by the Forest Service or the BLM outside reserves, although restoration actions can occur within reserves where there is a high risk of events occurring in the short term that would preclude achieving desired outcomes in the long term (for example, maintaining habitats for threatened or endangered species or other scarce habitats, or

controlling erosion by rehabilitating roads). Management outside the reserve boundaries include an emphasis on conserving remaining old forest stands and unroaded areas larger than 1,000 acres. Direct involvement with other federal agencies, and state, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

Reserves were selected for their representation of vegetation and rare animal species. Reserves are large. They cover all elevation ranges; currently most large reserves are found only at high elevations. Reserves are large enough so natural process can occur without the influence of humans and still maintain the communities they were selected to represent. No commercial timber harvest is permitted inside reserves, but limited silvicultural activities are allowed to enhance viable populations. Livestock grazing is strictly limited to improve the long-term conditions for which the reserve was established. Dispersed, low-impact recreation use is allowed, including hunting and fishing, as long as these activities do not affect populations or habitats of rare species. Management of reserves is focused on long-term maintenance of natural processes and conditions that plant and animal species have evolved with.

Under this alternative, the delineation of reserves was based on information in the *Scientific Assessment*, local sources, and the following criteria:

- ◆ Where they could be tied in with other habitats, current Congressional Reserves (such as designated wilderness) and Administrative Reserves (such as areas of critical environmental concern) were used as a base when mapping large-scale reserves for Alternative 7. Areas not included in the large-scale reserves will remain as currently designated.
- ◆ Habitats that support rare or narrowly distributed endemic species, as identified in the *Terrestrial Ecology* (Marcot et al. 1996) chapter of the *Assessment of Ecosystem Components*, were included.
- ◆ Large-scale reserves were overlaid with salmonid species strongholds, areas of high aquatic integrity, areas of narrowly-distributed endemic fish species, and areas of important fringe populations of salmonid species.



Map 3-17.
Alternative 6
Management Emphasis
for Forest Clusters

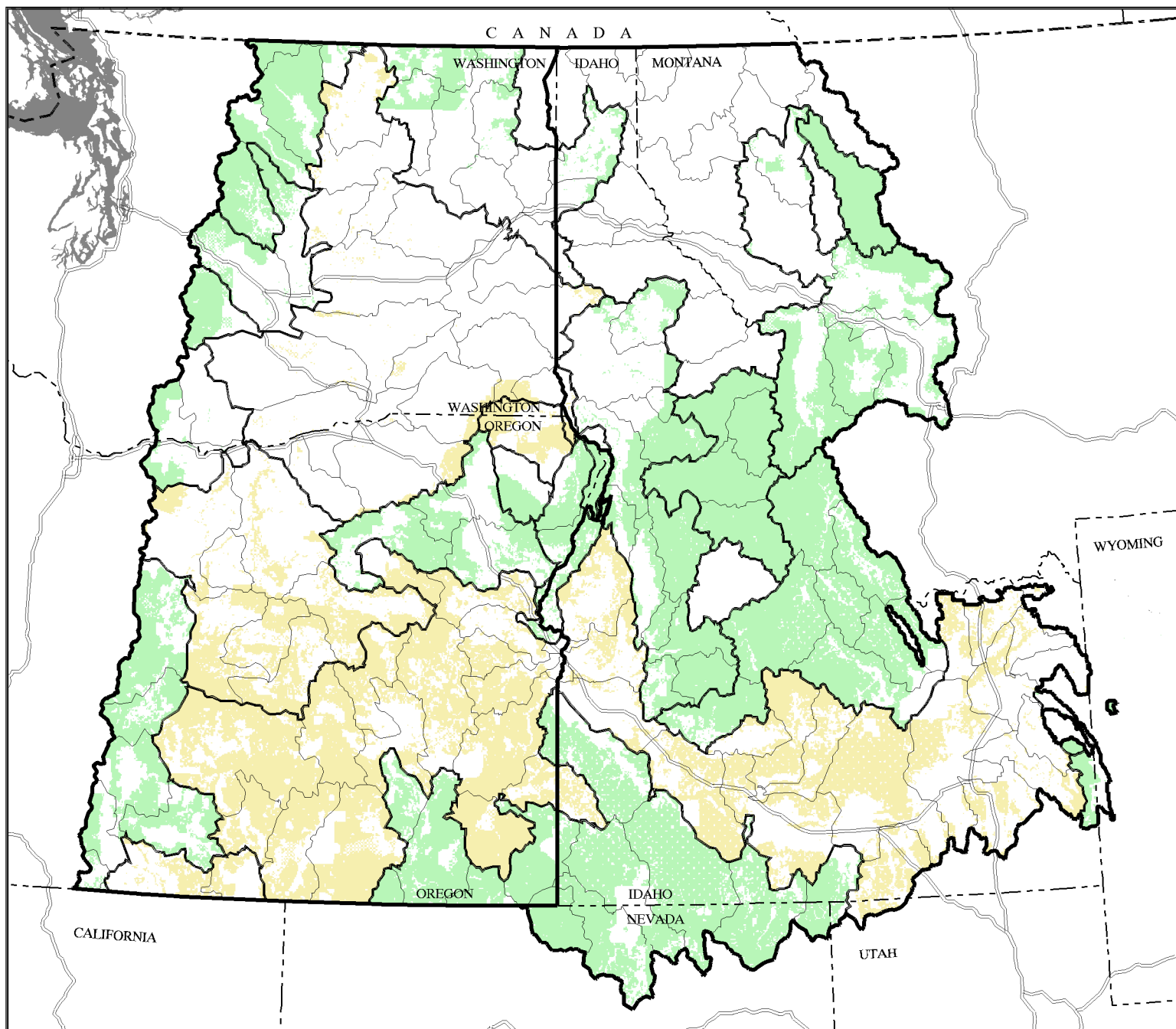
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-18.
Alternative 6
Management Emphasis
for Range Clusters

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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |

- ◆ Where possible, at least 20 percent of each major potential vegetation group was included within the large-scale reserves.
- ◆ Due to the large nature of the reserves, no attempt was made to distinguish between areas of high and low quality habitat. Approximately 42 percent of Forest Service- and BLM-administered lands became part of the reserve system.
- ◆ Large areas of core habitat for large carnivores, and northern spotted owl habitat along the east slope of the Cascade Range were also included in the large-scale reserves delineation.
- ◆ identifies all unroaded areas greater than 1,000 acres as strongholds for production of clean water, and aquatic- and riparian-dependent species;
- ◆ protects defined aquatic strongholds;
- ◆ establishes Riparian Conservation Areas (RCAs) (similar to Alternative 3) and Riparian Management Objectives (RMOs) based on PACFISH and various National Marine Fisheries Service Biological Opinions;
- ◆ provides standards more restrictive than PACFISH for Riparian Conservation Areas and strongholds for some operational items including timber harvest, roads, livestock grazing, minerals management, and fire suppression;
- ◆ pursues low levels of watershed restoration.

Design of Alternative 7

On BLM- and Forest Service-administered lands, Alternative 7 employs two basic emphases for management to enhance ecological integrity of and viable populations on forestlands and rangelands: Conserve and Conserve/Restore (see following table, and Maps 3-20 and 3-21).

In general, in the reserves, natural processes and disturbance events will be allowed to occur essentially unimpeded by human action. An emphasis is to restore fire as a natural disturbance process. However, limited management efforts may occur for some conditions where human action is considered necessary to achieve objectives of the reserves. The areas outside the reserves, sometimes referred to as the matrix, will be generally managed more actively.

Management actions in unroaded areas greater than 1,000 acres shall be the same as in large reserves. Unroaded areas are defined as those areas more than 50 feet slope distance from the edge of existing roadbeds and terminal points.

Activity tables (Tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 7 were selected.

The aquatic strategy in Alternative 7 is partially based on PACFISH and INFISH and input from the Association of Forest Service Employees for Environmental Ethics (AFSEE) and the Columbia River Inter-Tribal Fish Commission (CRITFC). The large reserves serve as a foundation for aquatic conservation. In addition, the alternative:

Ecosystem analysis, used to refine Riparian Conservation Areas and Riparian Management Objectives is required prior to many management activities. Map 3-22 shows areas where ecosystem analysis is potentially required under Alternative 7.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following conditions would also be expected in 50 to 100 years under Alternative 7.

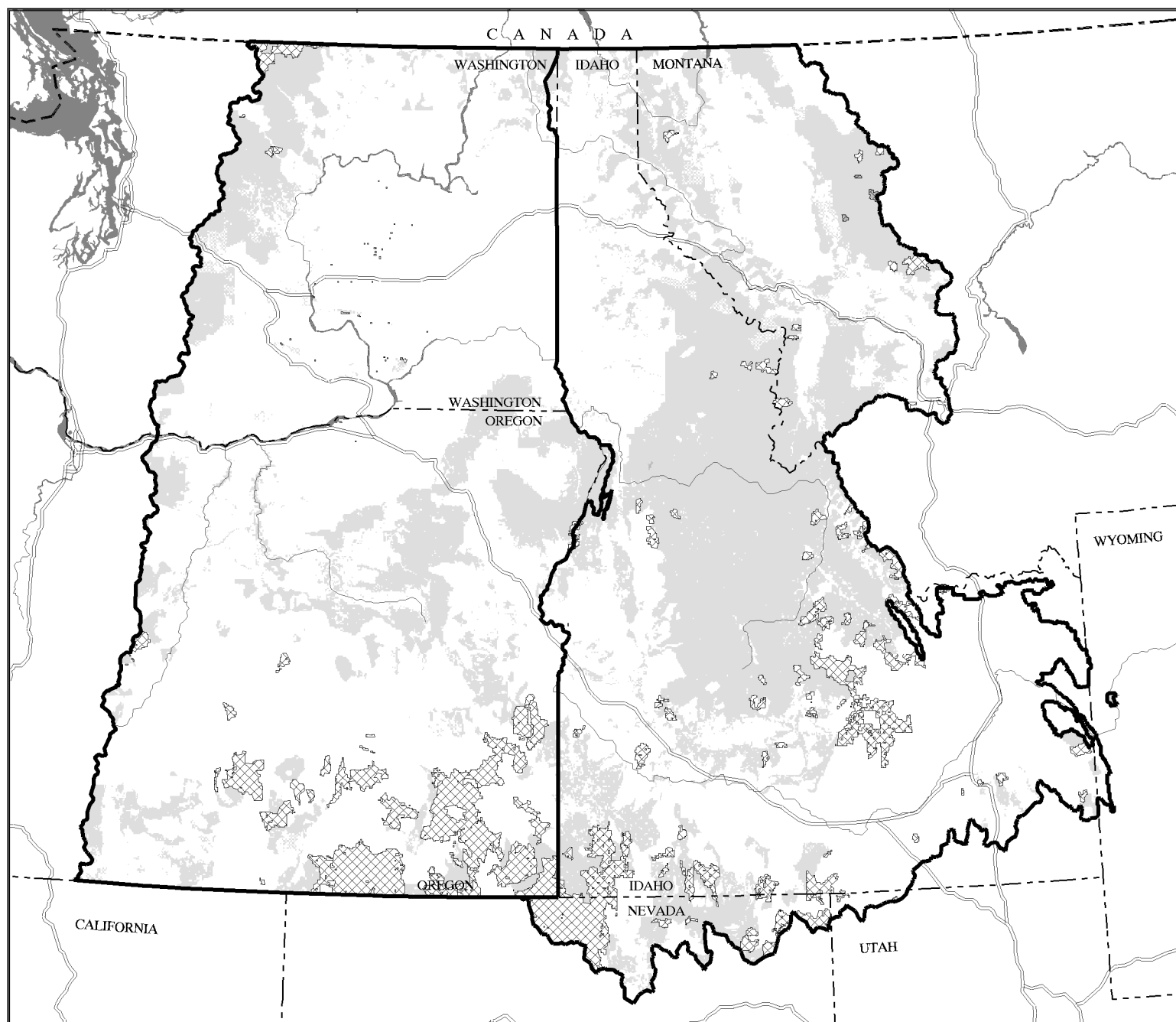
Terrestrial Ecosystems~ Forestlands

Dry Forest Potential Vegetation Group

In the dry forest potential vegetation group, early successional stages and disturbance processes are maintained through endemic insect and disease disturbances, and fire.

Within reserves, there is a high occurrence and persistence of young forest dominated by ponderosa pine in the regeneration and young forest structural stages. Stands are fairly well distributed in a mosaic of age classes (see Table 3-4).

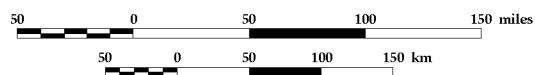
Outside reserves, there is a moderate occurrence of old single-story forest dominated by ponderosa pine with a moderate component of Douglas-fir and a minor component of grand fir. Vegetation management is used in addition to natural



**Map 3-18a.
Alternative 6
Potential Areas for Ecosystem Analysis
at the Watershed Scale**

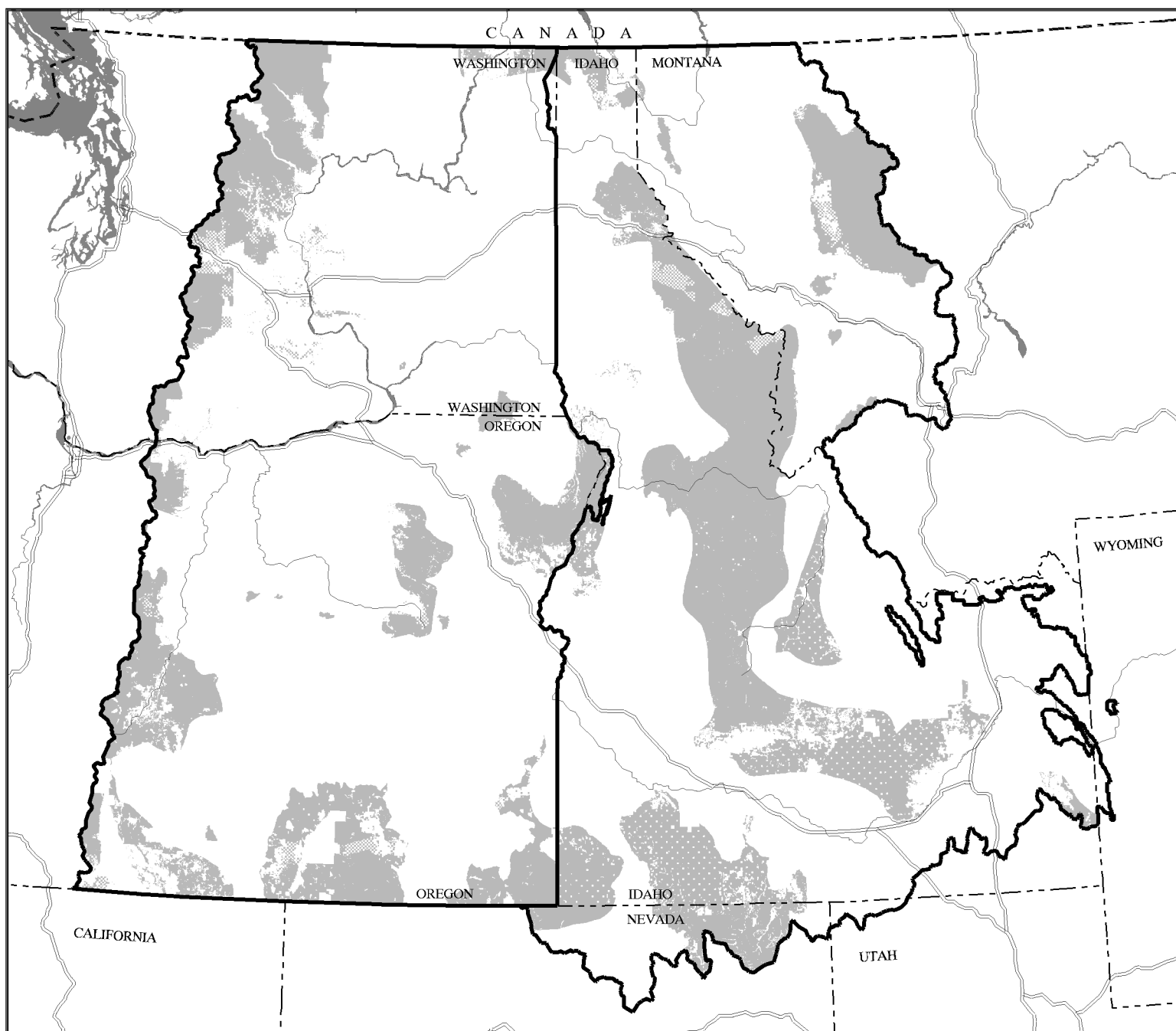
INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- Analysis Areas
- Analysis required for human-ignited prescribed fire
- Predicted road density at < 0.7 miles/square mile
- Major Rivers
- Major Roads
- EIS Area Border

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species or strongholds and fringe populations of redband trout, westslope cutthroat, or Yellowstone cutthroat trout. Also Ecosystem Analysis at the Watershed Scale is required prior to road density increases in subwatersheds that have road densities < 0.7 miles/square mile or prior to management activities that affect large blocks of native rangeland (not mapped).



Map 3-19.
Alternative 7
Preliminary Reserves

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



Reserve Area
 Major Streams
 Major Roads

disturbances and fire to maintain successional and disturbance processes. Stands are fairly well distributed in a mosaic of age classes.

Moist Forest Potential Vegetation Group

In the moist forest potential vegetation group, early successional stages and disturbance processes are maintained through endemic insect and disease disturbances, windthrow often aided by root rot, and fire.

Within reserves, there is a high occurrence and persistence of regeneration, young forest, and old multi-story stages dominated by shade-intolerant species, grand fir/white fir, and Engelmann spruce/subalpine fir (see Table 3-4). Outside the reserves there is a moderate occurrence and persistence of young forest consisting of western white pine, western larch and ponderosa pine with a minor component of grand fir. Vegetation management is used in addition to natural disturbances and fire to maintain successional and disturbance processes. Stands are distributed in a mosaic of age classes.

Cold Forest Potential Vegetation Group

In the cold forest potential vegetation group, early successional stages and disturbance processes are maintained through fire and endemic insect and disease disturbances.

Within reserves, there is a high occurrence and persistence of regeneration, young forest, and old multi-story stages of Douglas-fir, lodgepole pine, and Engelmann spruce/subalpine fir. Stands are distributed in mosaics of age classes (see Table 3-4). Outside reserves, the young forest stage is dominated by seral whitebark pine with a moderate component of Engelmann spruce/subalpine fir in a mosaic of age classes. Stands are distributed in large-patch mosaics of age classes.

Forest Wildlife Habitat

Within reserves, habitat is maintained to contribute to biodiversity, viable populations, and delisting of threatened or endangered species. All major vegetation groups are included in large reserves, providing an adequate representation of wildlife habitats. Habitats ensure long-term evolutionary potential of native species. Old forest structure is dominated by large trees, both dead and alive, typical of that which had developed with a natural disturbance regime. Old forest habitats provide for requirements of old forest-associated wildlife species.

Forested areas within reserves contain necessary structure, composition, and attributes of old forests. Reserves often absorb large disturbance events and impacts from activities adjacent to reserves and still provide sufficient habitat for viable populations. Reserves of all vegetation types are present in more than one location so large-scale disturbances are less likely to disrupt the intent of the reserve in the short term. Human activities allow species to maintain their distribution. Densities of species may be low, but expected species are present. Habitats of endemic or disjunct species and centers of biodiversity for rare plant and animal species are being managed to meet these species' requirements. Road use restrictions are common to maintain population densities and prevent disturbances that will cause animals to be displaced.

Table 3-4. Desired Seral Stages at the Landscape Level for Alternative 7.

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature ¹ & Old ² Single	Other ³
Distribution (percentage of PVG)					
Dry (W)	20-35	35-45	5-15	5-20	0-15
Dry (O)	15-25	30-45	10-20	10-30	
Moist (W)	25-40	45-60	5-15	2-7	
Moist (O)	20-30	45-60	10-20	5-10	
Cold (W)	30-40	40-50	5-15	5-10	1-2
Cold (O)	25-35	40-50	10-20	5-15	
Shade-Intolerant Species (percentage of seral stages)					
Dry (W)	70-80	65-75	55-75	65-85	
Dry (O)	70-80	60-70	55-70	75-90	
Moist (W)	65-80	60-70	50-70	65-80	
Moist (O)	65-75	55-65	50-60	55-70	
Cold (W)	60-75	60-70	50-60	85-95	
Cold (O)	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

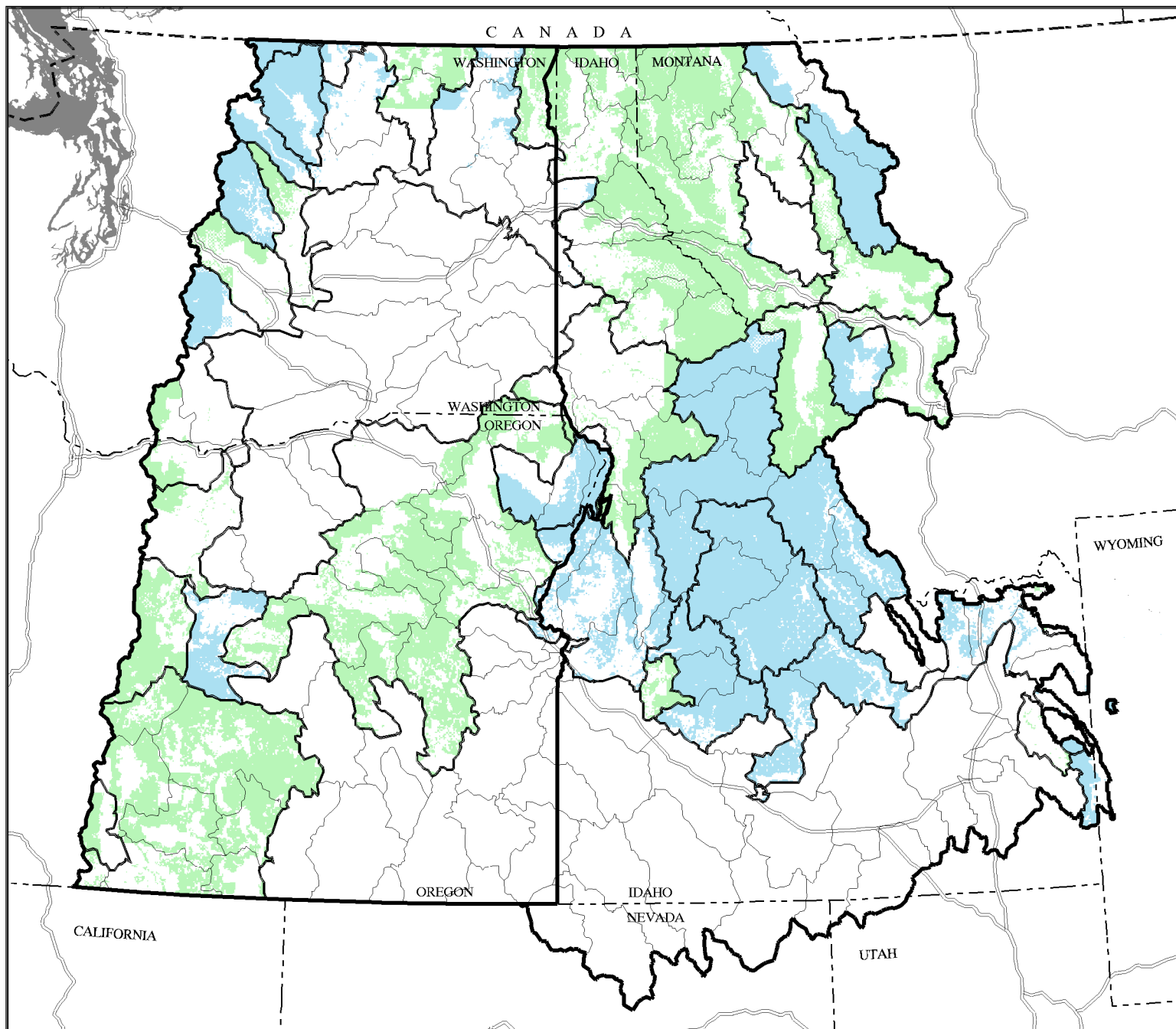
² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

PVG = Potential Vegetation Group

(W) = within reserves; DRFCs actually represent expected ranges of future conditions over the very long-term. Ranges of future conditions over the next 50-100 years are relatively unpredictable.

(O) = outside of reserves.



Map 3-20.
Alternative 7
Management Emphasis
for Forest Clusters

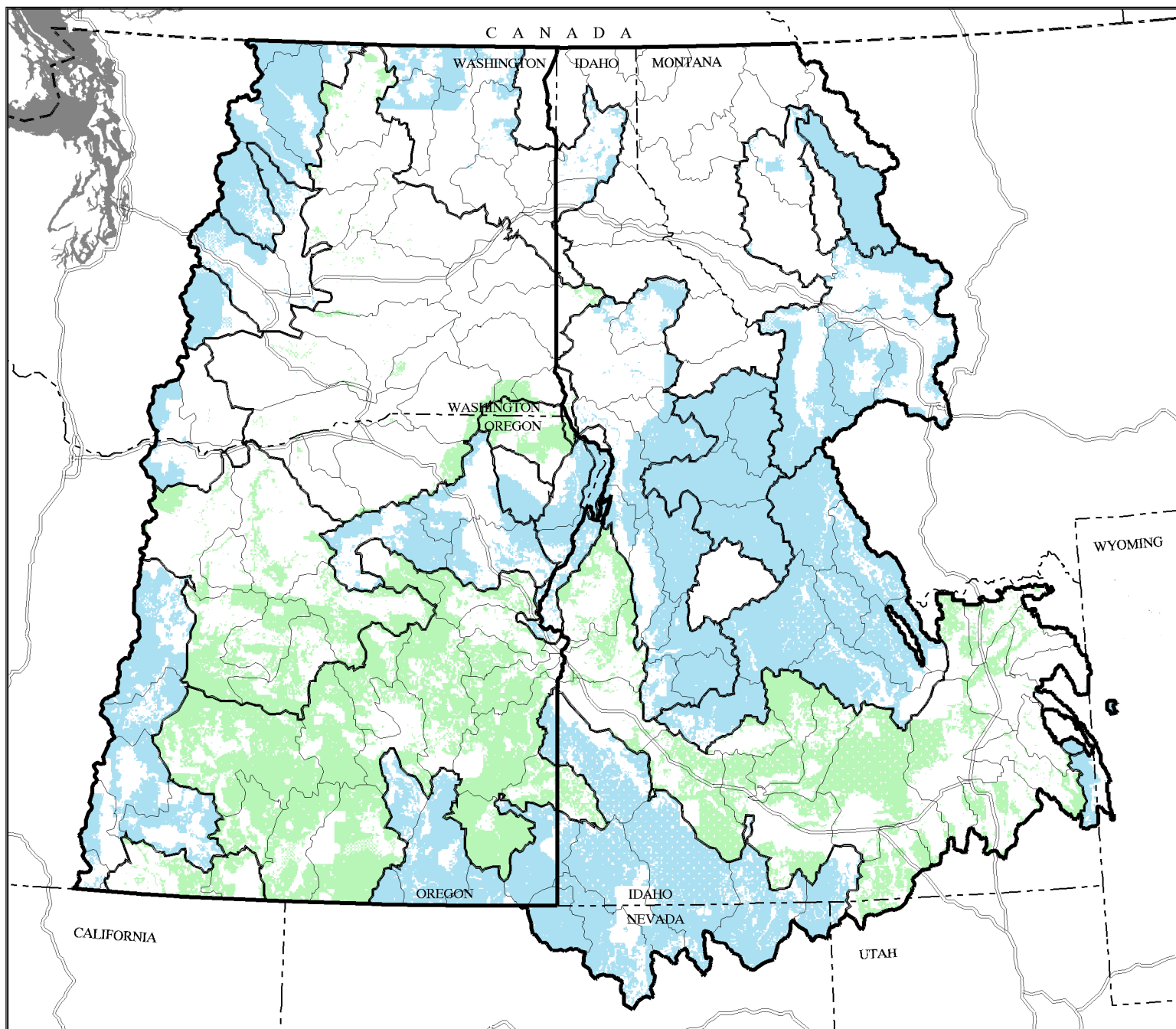
*BLM and Forest Service
Administered Lands Only*

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-21.
Alternative 7
Management Emphasis
for Range Clusters

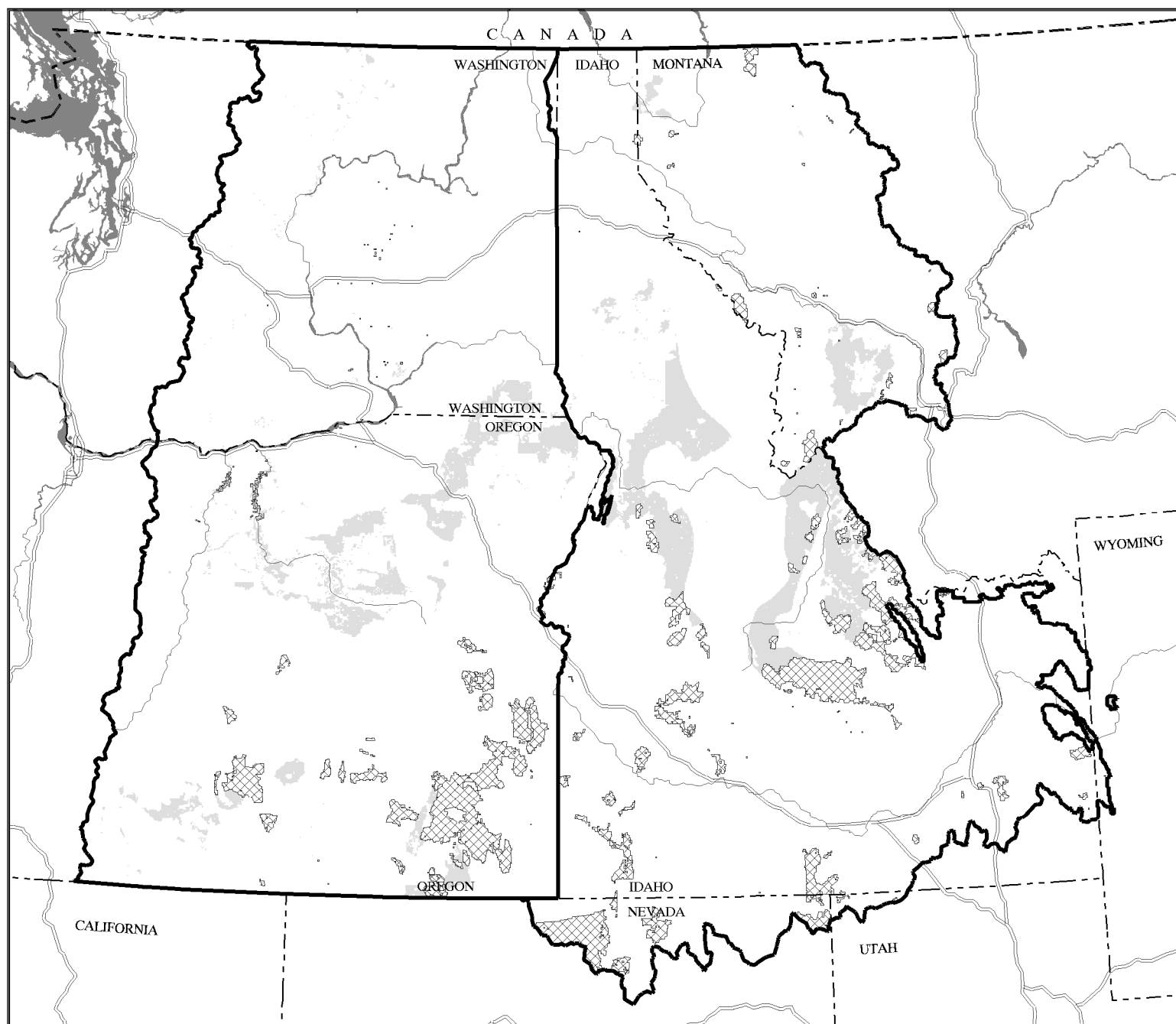
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



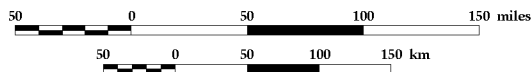
- | | |
|---|---|
| Conserve | 4th HUC Boundaries |
| Conserve / Restore | Major Roads |
| Restore | EIS Area Border |
| Restore / Produce | Cluster Boundary |
| Produce | |
| Produce / Conserve | |



Map 3-22.
Alternative 7
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|-----------------|
| Analysis Areas | Major Rivers |
| Analysis required for human-ignited prescribed fire | Major Roads |
| Predicted road density at < 0.7 miles/square mile | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species. Also, Ecosystem Analysis at the Watershed Scale is required prior to road density increases in subwatersheds that have road densities < 0.7 miles/square mile.

Outside of reserves, the desired range of future conditions for forested wildlife habitat is similar to that of Alternative 3.

Terrestrial Ecosystems ~ Rangelands

Within Reserves

Where noxious weeds or other exotic plants have not dominated the vegetation types, rangelands (especially the cool shrub areas) reflect a diverse mosaic of multiple-aged shrubs, forbs, and native grasses. Some seedings include native species in the moist areas and have become more diverse in the shrub component. Noxious weeds are increasing on the rangelands as a result of minimal control and due to the increasing competitiveness of noxious weeds with native plant species. The dry shrublands are affected by noxious weeds with a majority already infested.

Western juniper encroachment onto rangelands and riparian areas is slowed by natural fire where the understory vegetation provides adequate fine fuel to permit fire. Some juniper stands are being reduced in spatial extent by limited juniper cutting, especially those stands that are of sufficient density that site-biodiversity is being compromised, and are not likely to be affected by wildfire. Western juniper presence is confined primarily, but not exclusively, to sites such as rock outcrops, ridges, mesas and other sites that are not fire prone, which typically are characterized by low fine fuel accumulation and shallow soils. Conifers are being reduced by natural fire regimes on rangeland areas such as dry grassland.

Altered sagebrush steppe has occupied a majority of the dry shrub communities, especially the warm Wyoming sagebrush sites. Some altered sagebrush steppe areas, especially those in the more moist areas, are slowly moving toward a native plant community as native plants re-invade these areas. The slow conversion of altered sagebrush steppe sites to medusahead and yellow starthistle is apparent in some areas. Greenstripping and other fire breaks have been naturally colonized by some native species, although the seeded species is still dominant.

Outside Reserves

The general description is the same as Alternative 3.

Dry Grass Potential Vegetation Group

Seventy to ninety percent of the area within reserves and 50 to 70 percent of the area outside reserves are dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group

Twenty to forty percent of the area in this group within reserves is dominated by native grasses and forbs with an overstory layer of shrubs. Five to fifteen percent of the area within reserves is herbaceous-dominated. The remaining area within reserves is dominated by cheatgrass and noxious weeds, dense sagebrush canopy areas, and seedings. Forty to sixty percent of the area outside reserves in the dry shrub potential vegetation group is dominated by shrub stages with a healthy understory layer in which native grasses and forbs are well represented. Five to twenty percent of the area is dominated by native grass and forb communities outside reserves. The remaining area outside reserves is dominated by closed shrub communities with declining herbaceous layers, by annual grasses or seedings of exotic grasses, and by other plants.

Cool Shrub Potential Vegetation Group

Fifty to seventy percent of the area in this group is dominated by shrub stages with a healthy understory layer in which native grasses and forbs are well represented. Twenty to forty percent of the area within reserves, and 10 to 30 percent of the area outside reserves contains mixtures of perennial grasses and forbs. Conifers are dominant on 5 to 10 percent of the area within reserves, and less than 30 percent of the land outside reserves.

Rangeland Wildlife Habitat

All major rangeland cover types are included in the reserve system, providing representation of habitat and areas large enough to support all native species. Reserves represent the same habitats in several locations, to ensure that if a large disturbance event occurs in one reserve, the effects are short-term relative to the plant communities represented in all reserves. Human activities are at levels that allow species to maintain expected distribution and abundance for the habitats represented. Few roads are located within reserves. Because of these conditions, biodiversity, viable populations, and

Alternative 7 Management Emphases for the Project Area

Management Emphasis	% of All Forest Clusters	Forest Cluster No.	% of All Range Clusters	Range Cluster No.
Conserve	43	1, 2, 6	52	2, 3, 5
Conserve/Restore	57	3, 4, 5	48	1, 4, 6

continued recovery of federally listed threatened or endangered species are occurring within reserves.

Rangeland habitat attributes outside reserves are meeting the needs of endemic species, but not to the same extent as within reserves. Vegetation conditions are not barriers to movement of species between reserves. Conditions outside reserves do not cause reserves to become habitat islands. Human activities allow species to maintain distribution and abundance, but densities may be reduced. Use of roads are regulated as needed to maintain habitat effectiveness for species persistence.

Aquatic Ecosystems

Within Reserves

Riparian areas within reserves are resilient, diverse, and functioning within their site potential. Many less resilient, more sensitive areas are recovering. Moderate- or large-diameter tall trees within riparian areas are fairly frequent. Riparian areas are covered by protective vegetation and generally connected with their streams and upslopes. In rangeland reserves, riparian area soils are dominated by native, deep-rooted plants, and shrubs are especially common along stream banks. Wetlands are prevalent across the lower gradient valley bottoms.

Streams within reserves are generally productive, with diverse complex habitat. Stream cover and structure from inputs of large wood and bank vegetation are abundant. Substrates consist of a variety of particle sizes, which accommodate spawning and rearing needs of aquatic species. Large, deep, and complex pools are common.

Most soils within reserves have protective cover, adequate levels of soil organic matter, and coarse woody material that is well distributed in varying sizes and plant parts. Soils also have adequate

physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes of soils function similarly to comparable soils which have not been harmfully disturbed.

There is little evidence of openings from old road corridors across the landscape within reserves, in riparian areas or elsewhere, and no evidence of new openings from road corridors.

Aquatic Species Habitat

Restoration strategies have been implemented on nearly all high-risk sites within reserves. This allows recovery of watershed, riparian, water quality and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered aquatic species populations to stabilize and expand into previously occupied habitat. Native aquatic species population strongholds have increased. Major river corridor conditions allow near full expression of aquatic life histories.

Outside Reserves

Riparian areas outside reserves are mostly resilient and becoming diverse. Tall trees are apparent in riparian areas. Most non-reserve riparian areas are connected to their upslopes and streams. In rangelands outside reserves, most riparian area soils are covered by native vegetation. Wetlands are visible and frequent in the lower gradient valley bottoms.

Streams are moderately productive and complex. Large, deep, complex pools are present in many streams. Most soils have protective cover, adequate levels of soil organic matter, and coarse woody material.

The distribution, diversity, and complexity of watershed and landscape-scale features are maintained or restored to ensure protection of the

aquatic systems to which species populations and communities are uniquely adapted.

Spatial and temporal connectivity are maintained or restored within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact strongholds. These connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Human Uses and Values

Social and economic systems have adjusted to changes in the location, amounts and product mix of commodity and non-commodity outputs from lands administered by the BLM or the Forest Service in different parts of the project area.

Human uses and activities are very low within reserves. Restoration actions within reserves are completed within 10 to 20 years.

In areas most affected by reserves, economic and social adjustments have completed a shift away from commodity outputs and toward deriving the economic and social benefits of protected biological resources. Outside reserves economic and social systems have adjusted to decreased outputs of commodities.

Objectives and Standards

The objectives, standards, and guidelines included for Alternatives 1 and 2 (the No Action alternatives) are representative of the types of direction currently in effect in the 75 BLM and Forest Service land use plans in the project area. Because these plans were written at different times, by different teams from different agencies, few if any of the objectives, standards, or guidelines listed here are written exactly like those in the plans.

Objectives and standards for Alternatives 3 through 7 are found in Table 3-5, which follows Alternatives 1 and 2 descriptions. Guidelines for Alternatives 3 through 7 that describe how the objectives and/or standards could be implemented are listed in Appendix 3-2. They

were put in the appendix to emphasize that they are optional, not required, actions that could be used under each alternative. Guidelines for Alternatives 1 and 2 are included with the Objectives and Standards in this chapter because they are representative, not necessarily actual, guidelines.

Definitions

Objectives ~ Indicators used to measure progress toward attainment of goals. They address short- and long-term actions taken to meet goals and the desired ranges of future conditions. Unless otherwise stated all objectives listed here are assumed to be implemented within 10 years.

Standards ~ Required management actions addressing how to achieve objectives. Standards can include requirements to refrain from taking action in certain situations.

Guidelines ~ Suggested actions, priorities, processes, or prescriptions that are useful in meeting objectives. They are not required, but are included to further explain the intent of the Objectives and Standards. Guidelines are listed in Appendix 3-2.

Some of the objectives and standards place priority or emphasis for particular activities in certain forest or range clusters. This is intended to demonstrate where, at the broad scale, general priorities and emphasis should be. It in no way precludes similar activities in other clusters. Mid-level analysis, as described in the various objectives and standards as well as in Appendix 3-1, is a process that is intended to verify broad-scale information and emphasis, and identify additional opportunities.

Alternative 1

Physical Environment

Soil

A1/PE-O1. Objective: Plan and conduct land uses and management activities to minimize loss of site potential caused by detrimental erosion, compaction, displacement, puddling, and severe burning.

A1/PE-O2. Objective: Maintain at least 80 percent of each activity area in condition of acceptable productivity potential.

A1/PE-O3. Objective: Use management practices that ensure:

- ◆ adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils;
- ◆ permeability rates appropriate to climate and soils; and
- ◆ adequate nutrient capital and functioning cycles.

A1/PE-O4. Objective: Where detrimental effects have occurred, plan and implement rehabilitation to meet soil and water objectives and standards.

A1/PE-O5. Objective: Stabilize lands disturbed as a result of soil erosion control activities.

Air Quality

A1/PE-O6. Objective: Meet state air quality requirements.

A1/PE-S1. Standard: Prescribed burning shall be planned and conducted in accordance with state Smoke Management Plans and state Implementation Plans of the Clean Air Act.

A1/PE-G1. Guideline: Smoke management mitigation measures may be used to reduce emissions from prescribed burning.

A1/PE-S2. Standard: Reduce total emissions from prescribed burns to prevent significant deterioration.

A1/PE-G2. Guideline: Prescribed fire and other fuels management may be used to reduce the potential for wildfire emissions.

Terrestrial Ecosystems

Fire Management

A1/TE-O1. Objective: Manage wildland fire to protect human life and property and to minimize loss of resource values.

A1/TE-S1. Standard: All wildfires shall receive a prompt and appropriate suppression response, as defined by the agency.

A1/TE-S2. Standard: Priorities for fire suppression shall be the protection of human life, public safety, private property, and improvements or investments.

A1/TE-G1. Guideline: Minimum impact suppression methods can be used.

A1/TE-G2. Guideline: Prescribed fire can be used to meet vegetation management objectives and to reduce and maintain appropriate fuel profiles. Unplanned ignition may be used if a prescribed fire plan has been developed and the fire is within prescription.

A1/TE-G3. Guideline: Consider managing residue profiles at a level to minimize the potential of high intensity wildfire and provide for other resource objectives.

Noxious Weeds

A1/TE-O2. Objective: Integrate noxious weed management into project and activity planning to contribute to the prevention, detection, control, and eradication of noxious weeds.

A1/TE-S3. Standard: Plans and actions for control of competing and unwanted vegetation (including noxious weeds) shall be consistent with *Managing Competing and Unwanted Vegetation* (Forest Service 1988), *Vegetation Treatment on BLM Lands in Thirteen Western States* (BLM 1991), *Northwest Area Noxious Weed Control Program* (BLM 1987), or similar agency direction.

Forested Lands

A1/TE-O3. Objective: Use timber management activities to promote horizontal and vertical vegetative diversity to help meet wildlife, aesthetic, recreational, and other objectives.

A1/TE-S4. Standard: Allow regulated timber harvest only on lands classified as suitable for timber management. Prohibit timber harvest on lands unsuitable for timber management, except where needed to accomplish other multiple-use objectives.

A1/TE-S5. Standard: Selection of appropriate silvicultural systems should be guided by the following:

- ◆ objectives of the management area or resource emphasis.

- ◆ Permit the production of a volume of marketable trees sufficient to use all trees that meet utilization standards defined in agency guidelines and designated for harvest.
- ◆ Permit the use of acceptable logging methods that can remove logs and other products without excessive damage to the identified desirable retained vegetation.
- ◆ Be capable of meeting or providing special management conditions and achieve particular multiple-use management objectives (such as streamside protection, wildlife needs, and visual enhancement).
- ◆ Permit vegetation control and use appropriate practices to establish desired species, composition, density, and rates of growth of trees and other vegetation needed to achieve objectives.
- ◆ Promote stand structures and species composition that minimizes serious risk of damage caused by mammals, insects, disease, or wildfire, and allows treatment of existing insect, disease, or fuel conditions.
- ◆ Assure that lands can be adequately restocked within time frames.
- ◆ Be practical and economic in terms of transportation, harvesting, preparation, and administration of timber sales.

A1/TE-S6. Standard: Clearcutting should be allowed only when it is found to be the optimum harvest method.

A1/TE-G4. Guideline: The variety of management intensities and silvicultural practices can be used, singly or in combination, and will vary by site conditions and productivity, timber species, resource management objectives and timing of implementation.

A1/TE-G5. Guideline: Appropriate silvicultural practices can include site preparation, tree improvement, reforestation, release and weeding, thinning, fertilizing, pruning, sanitation harvest, salvage harvest, even-aged harvests (shelterwoods, seed tree, clearcuts), and uneven-aged harvest (individual tree or group selection). Regeneration and tree stocking standards are defined at the local area.

A1/TE-S7. Standard: Lands scheduled for timber harvest using even-aged practices should

be managed on rotation(s) equal to or greater than 95 percent of culmination of mean annual increment of growth (based on cubic foot measure).

A1/TE-S8. Standard: Where appropriate, stagger regeneration in space and time for even-aged areas. Created openings should be separated by blocks of land or areas not classified as a created opening. Harvested areas are not considered a created opening for timber management when tree stocking is above minimum levels, and when trees are four feet tall and free to grow.

A1/TE-S9. Standard: Openings created by even-aged harvesting should not exceed 40 acres; exceptions permitted under catastrophic conditions.

A1/TE-O4. Objective: Provide for salvage harvest of timber killed or damaged by events such as wildfire, wind storms, insect and diseases, consistent with management objectives for other resources.

Rangelands

A1/TE-O5. Objective: Make suitable rangelands available for grazing and browse use in coordination with other uses and protection of productivity.

A1/TE-S10. Standard: Allocate forage on allotment or management area to meet basic plant, plant vigor, and soil needs as first priority.

A1/TE-S11. Standard: Use the forage utilization standards defined in agency guides; use levels should be consistent with objectives established by land-use plans.

A1/TE-G6. Guideline: Set forage utilization standards (stocking rates) for livestock, wild horses and burros, and big game for riparian and upland areas based on species type, current allotment condition, and range management strategy.

A1/TE-G7. Guideline: Design grazing systems to maintain or improve plant vigor.

A1/TE-S12. Standard: Range project plans or allotment management plans and, where applicable, wild horse and burro herd management plans shall be developed, revised, and maintained. These plans establish objectives for managing vegetation resources (including activities needed to achieve the objectives) to achieve desirable riparian

conditions (including improvement schedule if needed, grazing system, season of use, class of livestock, stocking levels, forage products and utilization rates, improvements needed to achieve objectives, economic efficiency analysis, and coordinating requirements).

A1/TE-G8. Guideline: Intensive range management practices including rest may be used to protect and improve riparian vegetation and fish and wildlife habitats.

A1/TE-G9. Guideline: To stabilize soils, improve livestock forage conditions and wildlife habitat, seed poor condition rangelands to a site-specific mixture of native or desirable exotic grasses, forbs, and shrubs. Use seedings to decrease grazing pressure on native range to improve its condition.

A1/TE-G10. Guideline: To stabilize soils after wildfire, seed rangelands that have a low potential for natural recovery with a site-specific mixture of native or desirable exotic grasses, forbs, and shrubs.

A1/TE-G11. Guideline: Provide periods of rest from disturbance or livestock use during times of critical plant growth to maintain or improve vegetation condition.

Terrestrial Species and Habitats

A1/TE-O6. Objective: Provide habitat for viable populations of existing native and desirable non-native vertebrate wildlife species.

A1/TE-S13. Standard: Old/mature tree habitat (reserve where appropriate or develop replacement habitat where presently unavailable) should be maintained and well distributed across the landscape for indicator species that are dependent on old forests. Meet key species requirements by managing (reserve) areas of appropriate size and arrangement with adequate larger, older trees; proper stand structures and densities (usually multi-storied); snags and downed logs; associated feeding habitat; and other criteria.

A1/TE-S14. Standard: Adequate dead trees (snags) should be left to provide the required numbers and size of snags throughout the forest to maintain primary cavity excavators at 40 to 60 percent of their potential population in timber production areas and at appropriate levels in

other areas; leave appropriate levels of green trees to serve as a source of future snags.

A1/TE-S15. Standard: Dead and downed logs should be provided in appropriate numbers by size classes to support species that use this resource.

A1/TE-S16. Standard: Forest stands and shrub and grassland communities and successional stages should be managed to provide suitable big game habitat(s) cover quality, cover size and spacing, open road densities, and forage quality to meet species needs as defined in a Habitat Effectiveness Index.

A1/TE-S17. Standard: Big game habitats, including winter ranges, calving/fawning areas, wallows, and migration areas, should be protected at key times by maintaining desired vegetative structure and characteristics.

A1/TE-S18. Standard: Unique or featured wildlife habitats, including cliffs, talus, caves, seeps-springs, bogs, wallows and other wet areas (generally under 10 acres), should be managed to protect their primary values.

A1/TE-S19. Standard: For federal threatened, endangered, candidate, or special status species, use required biological assessment/evaluation procedures and meet consultation requirements. Promote preservation, restoration and/or maintenance of their habitats.

Wilderness and Reserves

A1/TE-O7. Objective: Manage wilderness areas for natural ecological processes with minimal human interference; preserve and protect natural conditions, processes, and wilderness character.

A1/TE-G12. Guideline: In wilderness areas and reserves, natural processes, disturbance events and cycles can be replicated using prescribed fire(s). (Naturally occurring fires are considered prescribed fires until declared a wildfire [outside of prescription]. Wildfires may be suppressed using appropriate agency suppression strategies.)

A1/TE-S20. Standard: In wilderness areas and reserves, recreation, range, and other permitted activity use and facilities shall be managed to meet wilderness objectives and preserve wilderness character and values.

A1/TE-G13. Guideline: In wilderness areas and reserves, the limits of acceptable change process can be used to determine management actions to preserve natural environments and provide for wilderness experiences.

A1/TE-S21. Standard: Timber harvest and motorized vehicle access shall be prohibited in wilderness areas or reserves except for emergencies or other authorized exceptions.

A1/TE-S22. Standard: Manage wilderness study areas to protect and preserve their wilderness characteristics. Protect and preserve special resource values in areas of critical environmental concern.

Aquatic Ecosystems

A1/AQ-O1. Objective: Inventory, treat, and improve conditions in watersheds in need of restoration to reverse or arrest adverse impacts to water quality and fish habitat. Areas where fish habitat(s) or water quality have been adversely affected shall be given high priority for corrective treatments that mitigate impacts or rehabilitate these areas.

A1/AQ-S1. Standard: Meet or exceed state water quality protection and restoration and federal Endangered Species Act requirements through planning, application, and monitoring of Best Management Practices (BMPs).

A1/AQ-S2. Standard: Beneficial uses shall be protected by implementing water quality practices, plans, and policies in current memoranda of understanding with the states.

A1/AQ-S3. Standard: Proposed projects or management actions shall be evaluated for cumulative effects on water quality, water quantity, and stream channels.

A1/AQ-G1. Guideline: Consider dispersing activities in time and space, where practicable, to the extent needed to meet management requirements.

A1/AQ-O2. Objective: Provide and maintain a diverse, well-distributed pattern of fish habitat to aid in increasing anadromous fish runs. For example,

- ◆ Meet criteria in state water quality standards for stream temperature and provision of streamside vegetation.

- ◆ Maintain sufficient large woody debris to provide for continuous long-term supply in all channels.
- ◆ Promote bank, floodplain, and channel stability to provide resiliency to disturbance and foster aquatic diversity.
- ◆ Provide pools that are large, well distributed, and persistent during low flows, and conserve or restore channel morphology appropriate to the climate and landform.
- ◆ Provide for cover for grass-forb, shrub and tree dominated sites in riparian areas.

A1/AQ-G2. Guideline: Practices that maintain or promote sufficient residual vegetation can be used to maintain, improve or restore riparian and wetland functions. Practices that maintain or promote appropriate channel morphology and functions may be used.

A1/AQ-O3. Objective: Achieve riparian and wetland area improvement and maintenance through management of existing uses, wherever feasible.

A1/AQ-O4. Objective: Maintain or improve riparian and wetlands to Properly Functioning Condition.

A1/AQ-O5. Objective: Limit or mitigate surface disturbance in floodplains, riparian areas, and aquatic habitats to prevent soil movement, loss, and sedimentation.

Human Uses and Values

A1/HU-O1. Objective: Provide a broad spectrum of developed and dispersed recreation opportunities and activities in a range of settings.

A1/HU-S1. Standard: Use the recreation opportunity spectrum (ROS) or appropriate agency direction to guide inventory and management to meet goals for recreation settings and experiences.

A1/HU-S2. Standard: Manage recreation settings and facilities to provide safe and sanitary recreation experiences, protect facilities, sites, and resources, and meet user needs.

A1/HU-S3. Standard: Protect and manage established dispersed recreation sites and special places.

A1/HU-O2. Objective: Maintain or enhance the visual character of the landscape.

A1/HU-S4. Standard: Meet or exceed established visual quality objectives using management principles and ecological techniques from the appropriate agency Landscape Management Systems.

A1/HU-O3. Objective: Coordinate management of lands, resources, and activities administered by the BLM or Forest Service with local, state, and federal agencies; private landowners; American Indian tribes; and interest and user groups.

A1/HU-G1. Guideline: Developing and strengthening partnerships can be emphasized while managing and enhancing resource use (fish, wildlife, recreation, others).

A1/HU-G2. Guideline: Coordinate fire management activities in rural interface areas with local governments, agencies, and landowners.

A1/HU-O4. Objective: Foster public awareness of, involvement in, and support for National Forest and BLM District land management objectives and programs.

A1/HU-O5. Objective: Support strategies that enhance rural community economic advancement; define complementary roles and implement programs that best serve the public. Assist in providing developmental, tourism, and recreational activities that help diversify rural economies and improve quality of life that attracts in-migration related to amenities.

A1/HU-S5. Standard: Provide a predictable supply of timber and other forest products within sustainable limits of the ecosystem(s).

A1/HU-S6. Standard: Provide a predictable supply of forage for livestock and wild horses within sustainable limits of the ecosystem.

Tribal Interests

A1/HU-O6. Objective: Provide for ceded land rights and treaty privileges of American Indians.

A1/HU-O7. Objective: Consult and coordinate planning and management activities with the tribes.

Locatable Minerals

A1/HU-O8. Objective: Provide opportunity for the exploration and development of mineral resources in areas identified as open to operations, subject to appropriate regulations.

A1/HU-S7. Standard: As required by applicable mining laws, provide access for exploration and development of locatable mineral resources.

A1/HU-S8. Standard: Where necessary to protect important lands and resources, mineral exploration and development shall be subject to appropriate restrictions or stipulations. The least restrictive limitations necessary for resource protection should be used.

A1/HU-S9. Standard: Where practical, surface disturbance from mining activities shall be reclaimed by taking measures that will prevent or control on-site and off-site damage to the environment and surface resources.

In this EIS, the following terminology has been used to distinguish standards from guidelines (Source: Forest Service Directive 1110.8, Degree of Compliance or Restriction in Directives):

Auxiliary Verb	Degree of Compliance/Restriction	Applies to
must, shall	Action is mandatory.	Standards
should	Action is required unless other actions (including non-action) fully meet the intent of the standard.	Standards
may, can, could	A suggested technique, which is optional.	Guidelines
will	Applies only to statement of future condition or an expression of time. Not to be used in place of shall or must.	Desired Range of Future Conditions

Leasable Minerals

A1/HU-O9. Objective: Provide leasing opportunities for oil, gas, coal, and geothermal exploration and development subject to appropriate regulations and requirements in areas identified as open to such activity.

A1/HU-S10. Standard: Subject to applicable laws and regulations, provide access for exploration and development of leasable mineral resources.

A1/HU-S11. Standard: All exploration applications shall receive appropriate environmental review and National Environmental Policy Act documentation prior to authorization.

A1/HU-S12. Standard: In order to protect special resource values and investments, leasing shall be subject to appropriate lease notices and lease stipulations.

A1/HU-S13. Standard: Ensure that operations are in compliance with appropriate regulations and that inspections are conducted in accordance with agency policies and procedures.

A1/HU-S14. Standard: All surface disturbance from operations should be reclaimed to a productive condition to the extent reasonable and practicable.

A1/HU-O10. Objective: Provide and manage a safe and economical transportation system to provide public access and meet resource and protection objectives.

A1/HU-S15. Standard: Plan, develop, operate, and maintain leasable mineral activity sites according to agency standards and objectives for planned uses and activities, safety, economics, and impacts on lands and resources.

Implementation, Adaptive Management, and Monitoring

A1/IA-O1. Objective: For riparian areas, set measurable objectives and monitoring for key parameters such as stream surface shading, streambank stability, and shrub cover.

A1/IA-S1. Standard: Ensure that management activities comply with appropriate regulations and that inspections are conducted in accordance with agency policies and procedures.

Northwest Forest Plan

The following objectives and standards apply to Forest Service- or BLM-administered lands covered by the Northwest Forest Plan. This direction applies to all alternatives. See the Record of Decision for Amendments to Forest Service and BLM Planning Documents Within the Range of the Northern Spotted Owl (1994), for more detail on explanation of terms or concepts used in this section. Ecosystem Analysis is applicable under all alternatives to areas described within the Northwest Forest Plan.

Aquatic Conservation Strategy

NW-O1. Objective: General aquatic conservation for areas covered by the Northwest Forest Plan is as follows:

- ◆ Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of aquatic systems.
- ◆ Maintain and restore spatial and temporal connectivity within and among watersheds.
- ◆ Maintain and restore the physical integrity of aquatic systems.
- ◆ Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.
- ◆ Maintain and restore the sediment regime under which aquatic ecosystems evolved.
- ◆ Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats, and to retain patterns of sediment, nutrient, and wood routing.
- ◆ Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
- ◆ Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

- ◆ Maintain and restore habitat to support well-distributed populations of native riparian-dependent plant, invertebrate, and vertebrate species.

NW-O2. Objective: Emphasize riparian-dependent resources by maintaining and restoring riparian structure and function, conferring benefits to riparian-dependent and associated species, enhancing habitat conservation for organisms that are dependent on transition zones between upslopes and riparian areas, improving travel and dispersal corridors for terrestrial animals and plants, and providing greater connectivity of the watershed. Riparian reserves serve as connectivity corridors among late-successional reserves.

NW-S1. Standard: Riparian reserves shall be delineated and managed in all watersheds to protect and restore riparian and aquatic integrity and function according to prescribed widths for defined categories of streams or water bodies (see Alternative 2, PACFISH standards).

NW-S2. Standard: Special standards that regulate activities on Forest Service- or BLM-administered lands along streams and unstable or potentially unstable areas shall be applied where attainment of aquatic conservation objectives may be prevented.

NW-S3. Standard: Restoration and vegetation manipulation actions in riparian reserves should facilitate ecosystem function; reconnect linkages between aquatic, riparian, and upland environments; and focus on the causes of degradation. Note that some of the following guidelines do not apply unless site-specific or ecosystem analysis is performed.

NW-G1. Guideline: To avoid artificial habitat edges at riparian reserve boundaries in areas of timber harvest, livestock grazing, or vegetation manipulation, feathering of vegetation structure between riparian reserves and adjacent lands may be used. Feathering strategies may be used so as to have negligible effect on bank stability, streamside shading, channel/floodplain interactions, and wood inputs to the aquatic/riparian system.

NW-G2. Guideline: Treatments may be designed and implemented that affect riparian vegetation pattern, composition, or structure in a manner that reflects natural disturbance processes (for example, flood or fire).

NW-G3. Guideline: On rangelands, domestic grazing intensity and season of use may be regulated to limit bank trampling, restore plant vigor, promote vegetation cover, and increase energy storage.

NW-G4. Guideline: On rangelands, spring and seep development may be regulated to protect ecological processes, functions, and states at these sites.

NW-G5. Guideline: Water development, fencing, salt, and supplements on upland areas may be located to keep domestic livestock from congregating in riparian areas.

NW-G6. Guideline: Because fencing commonly fails to successfully exclude livestock, consider other management options prior to implementing permanent enclosures around riparian areas.

NW-S4. Standard: Road obliteration and rehabilitation should be a high priority within riparian reserves to reduce adverse consequences to aquatic/riparian resources due to roads.

NW-S5. Standard: Design of necessary new roads in riparian reserves should be done in a manner that does not disrupt natural hydrological flow paths, including diversion of streamflow and interception of surface and subsurface flow.

NW-G7. Guideline: Necessary new roads may be constructed and existing roads may be maintained to minimize sediment introduction into aquatic environments and disruption of hydrologic regime.

NW-G8. Guideline: Where appropriate, control road access with the intent to limit introductions of exotic aquatic biota.

NW-G9. Guideline: All new road stream crossings may be constructed to maintain fish passage within riparian reserves currently supporting fish species, or streams which historically supported native fish species.

NW-S6. Standard: All new road stream crossings shall be constructed to accommodate at least the 100-year flood event. Design criteria should be on the basis of standard engineering practices.

NW-03. Objective: Identify and manage key watersheds to maintain and recover “at-risk” stocks of fish through a system of large refugia (designated areas that provide or are expected to provide high quality habitat). Two designations of key watersheds have been identified: (1) Key watersheds (Tier 1/aquatic conservation emphasis) have been selected for directly contributing to conservation of at-risk anadromous salmonids, bull trout, and resident fish species; and (2) Key watersheds (Tier 2) were selected as sources of high quality water and may not contain at-risk fish stocks.

NW-S7. Standard: In key watersheds, no new roads should be built in unroaded portions of inventoried roadless areas (subject to valid existing rights). Road mileage outside roadless areas should be reduced. Permit no net increase in the amount of roads, if funds are insufficient to implement reductions.

NW-G10. Guideline: Key watersheds may be considered the highest priority for watershed restoration.

NW-04. Objective: Conduct ecosystem analysis within a watershed using the watershed analysis procedures to help implement management objectives.

NW-S8. Standard: Ecosystem analysis shall be required for key watersheds and unroaded areas prior to resource management activities. Exceptions are minor activities categorically excluded under NEPA, analysis of earthflows for inclusion with riparian reserve, and modifications of riparian reserve boundaries.

NW-G11. Guideline: Ecosystem analysis is recommended for all other watersheds.

NW-G12. Guideline: Information from ecosystem analysis may be used to guide management prescriptions and monitoring strategies.

NW-05. Objective: Design and implement watershed restoration activities to restore watershed processes, recover fish and riparian habitat, and improve water quality.

NW-G13. Guideline: Watershed restoration may be focused on removing roads and upgrading those that remain in the system.

NW-G14. Guideline: Silvicultural systems may be applied to restore and retain large conifers in riparian reserves.

NW-S9. Standard: Standards from current plans shall be applied where they are more restrictive or provide greater benefits to late-successional forest-related species compared to the direction from the Northwest Forest Plan. Exceptions consist of provisions in the Northwest Forest Plan that are specifically designed to replace direction in current plans including:

- ◆ Direction specific to management for the northern spotted owl and its habitat.
- ◆ Administratively withdrawn areas that are specified in current plans to benefit certain late-successional species are returned to the matrix unless local knowledge indicates the Northwest Forest Plan and direction will not meet management objectives for these species.
- ◆ Green tree retention standards for the matrix exceeding 15 percent in current plans are superseded by 15 percent retention direction in the standards and guidelines.
- ◆ For adaptive management areas, direction in current plans needs to be considered during planning and implementation activities and may be modified in adaptive management areas plans based on site specific analysis.

NW-S10. Standard: Standards regarding unmapped late-successional reserves, ecosystem analysis, and research, that are common to all land allocations covered by the Northwest Forest Plan shall apply.

NW-06. Objective: Survey and manage to provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods.

NW-S11. Standard: Information for known species sites should be acquired and used in management activities.

NW-G15. Guideline: The appropriate action generally provides protection of relatively small sites; for some species, the appropriate action includes use of specific management treatments.

NW-S12. Standard: Survey protocols for identified species should be developed and completed prior to ground-disturbing activities.

NW-S13. Standard: Extensive surveys for species should be conducted to find high-priority sites for species management.

NW-S14. Standard: Additional information should be surveyed and acquired for certain species (arthropods, fungi species [not rare or endemic], bryophytes and lichens) to determine necessary levels of protection.

NW-S15. Standard: Known and newly discovered sites of certain identified mollusk and vascular plant species shall be protected from grazing by all practicable steps.

Congressional Designations

NW-O7. Objective: Manage congressionally designated lands by following direction written in applicable legislation or plans.

NW-S16. Standard: In Congressionally Reserved Areas, the direction from the Northwest Forest Plan shall also apply where it is more restrictive or provides greater benefits to late-successional forest related species, unless the application of standards would be contrary to legislative or regulatory language or intent.

Late-successional Reserves

NW-O8. Objective: Manage to protect and enhance conditions of late-successional and old forest ecosystems, which serve as habitat for late-successional and old-growth-related species, including the northern spotted owl. Reserves are designed to maintain a functional interacting, later successional and old growth forest system. Late-successional reserves have been designated including: mapped late-successional reserves, known spotted owl activity centers (in matrix and adaptive management areas), and protection buffers.

NW-S17. Standard: A management assessment should be prepared for each large late-successional reserve (or group of smaller late-successional reserves) before habitat manipulation activities are designed and implemented. Late-successional assessments are subject to review by the Regional Ecosystem Office.

NW-S18. Standard: Stand and vegetation management of any type in late-successional reserves shall be considered a silvicultural treatment.

NW-G16. Guideline: Encourage efforts to reduce the probability of major stand-replacing events consistent with the late-successional reserve direction.

NW-G17. Guideline: Focus silvicultural activities aimed at reducing risk on younger stands in late-successional reserves to accelerate development of late-successional conditions while making future stands less susceptible to natural disturbance.

NW-S19. Standard: In late-successional reserves where levels of risk are particularly high and additional measures are required, management activities should be designed to reduce risks. Activities in older stands may be appropriate if (1) proposed management activities will result in greater assurance of long-term maintenance of habitat, (2) the activities are needed to reduce risk, and (3) the activities will not prevent the late-successional reserve from playing an effective role in the objectives for which they were established.

NW-S20. Standard: Treatments including salvage should not generally result in a degeneration of currently suitable owl habitat or other late-successional conditions.

NW-S21. Standard: Management following a stand-replacing event should be designed to accelerate the high quality habitat for species associated with late-successional conditions. Salvage activities should focus on long-range conditions based on the desired future condition of the forest.

NW-S22. Standard: Specific salvage guidelines should be developed for each physiographic province and possibly for different forest types within the province.

NW-G18. Guideline: Northwest Forest Plan guidelines may be used for salvage until province direction is provided.

NW-S23. Standard: Most non-silvicultural activities located inside late-successional reserves that are neutral or beneficial to the creation and maintenance of late-successional habitat should be allowed. Some existing uses and current development activities should be modified or eliminated that pose adverse impacts and changes made to current direction governing these activities: American Indian use, contracted rights, developments, easements, fire

suppression and prevention, fuelwood gathering, habitat improvement projects, range management, recreational use, research, rights-of-way, road construction and maintenance, special forest products, land exchanges, special use permits, and nonnative species.

Managed Late-successional Reserves

NW-O9. Objective: Manage to produce and maintain an optimal level of late-successional and old-growth forest ecosystems on a landscape scale as identified for certain spotted owl activity centers where regular and frequent fire is a natural part of the ecosystem. Managed late-successional areas have been designated for known owl pairs and resident singles in Washington's Eastern Cascades and for protection buffers for specific endemic species.

NW-S24. Standard: Each managed late-successional area or group of smaller managed late-successional areas should have a management assessment, as described for late-successional reserves.

NW-O10. Objective: Maintain suitable northern spotted owl habitat through time using various management techniques. Permit certain silvicultural and fire hazard reduction treatments to prevent complete stand destruction from large catastrophic events such as high intensity, high severity fires or disease or insect epidemics.

NW-S25. Standard: Silviculture, salvage and multiple-use activities for these areas should always be guided by the objective of maintaining adequate amounts of suitable habitat.

NW-S26. Standard: Standards applicable to late-successional reserves for multiple-use activities (other than silviculture) also apply to managed late-successional areas. Protection buffers should be used for certain rare and locally endemic species to assure viability.

NW-O11. Objective: Maintain an amount of suitable habitat equal to median amounts observed in home ranges of spotted owl pairs in each province. The location of this acreage may change through time as management is rotated through the area. Some management uncertainty will be accepted to provide habitat in these areas. Accommodation of risk should be considered during consultations per Section 7 of the Endangered Species Act.

Adaptive Management Areas

NW-O12. Objective: Learn how to manage on an ecosystem basis in terms of both technical and social challenges and in a manner consistent with applicable laws.

NW-O13. Objective: Encourage the development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.

Matrix Lands

NW-O14. Objective: On lands outside the six categories of designated areas (congressionally reserved areas, late successional reserves, adaptive management areas, managed late successional areas, administratively withdrawn areas, and riparian reserves), conduct most of the timber harvest and silvicultural activities on suitable forest lands, according to standards and guidelines. Most scheduled timber harvest contributing to probable sale quantities takes place in these matrix lands.

NW-O15. Objective: Provide a renewable supply of well-distributed coarse woody debris in the matrix to maintain populations of various organisms that use this habitat structure.

NW-S27. Standard: Develop models for groups of plant associations and stand types that can be used as a baseline for developing prescriptions and local standards. Until local standards are developed, the following direction should be applied: A minimum of 120 linear feet of logs per acre greater than or equal to 16" in diameter and 16 feet long should be retained. Log decomposition class 1 and 2 logs can be counted toward these totals. Stages of deterioration of logs range from essentially sound [class 1] to almost total decomposition [class 5].

NW-S28. Standard: Coarse woody debris on the ground should be retained and protected to the greatest extent possible from disturbance during treatment. Downed logs should be left within forest patches that are retained under green-tree retention guidelines.

NW-O16. Objective: Emphasize green tree and snag retention on matrix lands for biological diversity and ecosystem function benefits.

NW-S29. Standard: Green trees and snags should be retained in patches, generally larger than 2.5 acres. Green trees and snags should be retained on at least 15 percent of the area associated with each timber harvest unit in the matrix lands. The limitation does not apply to intermediate harvest (thinnings) in even-aged young stands.

NW-G19. Guideline: As a general guide, include aggregates of moderate to larger size (0.49 to 2.47 acres or more) on 70 percent of the total area to be retained with the remainder as dispersed structures (individual trees, possibly including smaller clumps less than 0.49 acres). Retention of large aggregates may be particularly important where adjacent areas have little late-successional habitat.

NW-S30. Standard: To the extent possible, patches and dispersed retention should include the largest, oldest live trees, decadent or leaning trees, and hard snags in the unit. Patches should be retained indefinitely.

NW-S31. Standard: As a minimum in the matrix, snags should be retained with the harvest unit at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population level based on published guidelines or models. The per-acre requirement should be met on average areas no larger than 40 acres.

NW-G20. Guideline: To the extent possible, include snag management and retention within the areas of green tree retention in the harvest units.

NW-S32. Standard: Retain 16 to 25 large green trees per acre where available in harvest units administered by the BLM in the Klamath Falls Resource Area.

NW-O17. Objective: Provide additional protection for caves, mines, and abandoned wooden bridges and buildings that are used as roost and hibernation sites for bats.

NW-S33. Standard: Surveys of crevices in caves, mines and abandoned wooden bridges and buildings should be conducted for presence of roosting bats.

NW-S34. Standard: As an interim measure, timber harvest should be prohibited within 250 feet of sites containing bats. Management standards that may be included as mitigation measures in project or activity plans will be developed for the site.

NW-O18. Objective: Minimize soil and litter disturbance by modifying site-treatment practices, particularly use of fire and herbicides, and modifying harvest methods.

NW-S35. Standard: Site treatments that minimize intensive burning should be prescribed, unless appropriate for certain specific habitats, communities, or stand conditions. Prescribed fire should be planned to minimize the consumption of litter and coarse woody debris.

NW-S36. Standard: Soil and litter disturbance that may occur as a result of yarding and operating heavy equipment and the intensity and frequency of site treatments should be minimized.

NW-O19. Objective: Provide for retention of fragments of old forest in watersheds where little remains to support biological and structural diversity (refugia) across the landscape.

NW-S37. Standard: Fifth-field watersheds (20 to 200 square miles or 12,800 to 128,000 acres) where federal lands currently comprised 15 percent or less of late-successional forestlands should be managed to retain and protect all late-successional stands.

NW-S38. Standard: Management of stands in the matrix surrounding known northern spotted owl activity centers shall be designed to reduce risks of natural disturbance to protect owl habitat.

NW-O20. Objective: White-headed woodpecker, black backed woodpecker, pygmy nuthatch, flammulated owl, and lynx should have protection buffers in the matrix.

Federal Trust Responsibilities to Indian Tribes

See Northwest Forest Plan direction for details.

Alternative 2

Physical Environment

Same direction as Alternative 1.

Terrestrial Ecosystems

Forestlands

Same direction as Alternative 1 except the following objectives and standards described for the Eastside Screens.

A2/TE-S1. Standard: Timber sales shall be designated to incorporate interim standards for ecosystem analysis and management (some types of timber sales are exempt from consideration under this standard).

A2/TE-S2. Standard: The following ecosystem characterization and analysis process shall be used:

- ◆ Characterize the proposed timber sale and its associated watershed for patterns of stand structure by biophysical environment and compare to the historical range of variability.
- ◆ Use the processes and ecosystem characterization steps defined in Appendix B of Eastside Screens (1995).
- ◆ Identify structural components and biophysical environment combinations that are outside historical range of variability conditions to determine potential treatment areas.

Wildlife Habitat (Eastside Screens)

A2/TE-O1. Objective: Same as Alternative 1.

A2/TE-S3. Standard: For timber sales the following process shall be used:

- ◆ Use Scenario A whenever any one type of late and old structure in a particular biophysical environment is below historical range of variability.
- ◆ Use Scenario B when both late and old structural stages within a particular biophysical environment are at or above historical range of variability.
- ◆ Late and old structure can be either multi-story with large trees or single-story with large trees.

- ◆ Late and old structure stages are calculated separately.

A2/TE-O2. Objective: Scenario A: If either one or both of the late and old structural stages fall below historical range of variability in a particular biophysical environment within a watershed, manage to ensure no net loss of late and old structure from that biophysical environment.

A2/TE-S4. Standard: Scenario A: Timber sale harvest activities shall not be allowed to occur within late and old structure stages that are below historical range of variability. Harvest of dead trees may be permitted when standards for snags and downed logs are met.

A2/TE-G1. Guideline: Scenario A: Some timber sale activities can occur within late and old structure stages that are within or above historical range of variability in a manner to maintain or enhance late and old structure within that biophysical environment. One type of late and old structure may be manipulated to move stands into the late and old structure stage that is deficit if this meets historical conditions.

A2/TE-O3. Objective: Scenario A: Outside of late and old structure, maintain and/or enhance late and old structure components in stands subject to timber harvest activities.

A2/TE-S5. Standard: Scenario A: For timber sales in conditions outside late and old structure, the following shall be adhered to:

- ◆ All remnant late and old seral and/or structural live trees greater than 21" diameter at breast height that currently exist shall be maintained within stands proposed for harvest activities.
- ◆ Vegetative structure that does not meet late and old structural conditions shall be manipulated using treatments that move stands toward appropriate late and old structural conditions to meet historical range of variability.
- ◆ Open, park-like stand conditions shall be maintained where this condition occurred historically. Manipulate vegetation to encourage the development and maintenance of large diameter, open canopy structure. (While understory removal is allowed, some amount of seedlings, saplings, and poles need to be maintained for the development of future stands).

A2/TE-O4. Objective: Scenarios A and B: Maintain connectivity and reduce fragmentation of late and old structural stands.

A2/TE-S6. Standard: The current level of connectivity between late and old structural stands and forest plan-designated “old growth” habitats should be maintained or enhanced by maintaining stands between them that serve the purpose of connections, using criteria for network pattern, connectivity corridor description, length of connection corridors and timber harvest and silvicultural criteria (Appendix B of Eastside Screens 1995).

A2/TE-S7. Standard: Stands that do not currently meet late and old structure and that are surrounded by blocks of late and old structure should not be considered for even-aged regeneration or group selection. Non-regeneration or single tree selection in these areas should only proceed if the prescription moves the stand toward late and old structure condition.

A2/TE-O5. Objective: Scenario B: Maintain wildlife habitat management options by affecting large and/or contiguous stands of late and old structure as little as possible, while meeting other multiple-use objectives.

A2/TE-S8. Standard: Scenario B: Within a particular biophysical environment within a watershed, if the single, existing late and old structural stage is within or above historical range of variability, and if both types of late and old structural stages occur and both are within or above historical range of variability, then timber harvest can occur within these stages as long as late and old structural conditions do not fall below historical range of variability. Late and old structural conditions and attributes should be enhanced as possible, consistent with other multiple-use objectives.

Harvest activities (any and all types being considered) should occur in the following stand types in order of priority:

1. First priority is within stands other than late and old structure.
2. Second priority is within smaller, isolated late and old structural stands less than 100 acres and/or at the edges (first 300 feet) of large blocks of late and old structural stands (greater than 100 acres).
3. As a last priority some harvesting can occur within the interior of large, late and old

structural stands (greater than 100 acres; beyond 300 feet from edge), but is limited to non-fragmenting prescriptions such as thinning, single-tree selection (uneven-aged management), salvage, understory removal, and other non-regeneration activities. Group selection (uneven-aged management) is allowed only when created openings either mimic the natural forest pattern and/or do not exceed 0.5 acre; regeneration and group selection activities are not allowed.

A2/TE-O6. Objective: Manage dead trees (snags) to provide the required numbers and size of snags throughout the forest to maintain primary cavity excavators at 40 to 60 percent of their potential population in timber production areas and appropriate levels in other areas; leave appropriate levels of green trees to serve as a source of future snags.

A2/TE-S9. Standard: For timber sales, the following bullets refer to snags, downed logs, and green tree replacement habitats in timber sales (Appendix B of Eastside Screens, 1995):

- ◆ Snags and green tree replacement trees greater than 21 inches diameter at breast height (or whatever is the representative diameter at breast height of the overstory layer if it is less than 21 inches) should be maintained at 100 percent potential population levels of primary cavity excavators.
- ◆ For lodgepole pine stands, all sale activities shall maintain snags and green replacement/roost trees of greater than 10 inches diameter at breast height at 100 percent potential population levels of cavity excavators. The largest available trees should be left to meet this requirement.
- ◆ Downed logs should be retained at appropriate quantities (see table below) while permitting accomplishment of fire protection needs for life and property and prescribed burning and without extraordinary measures to meet requirements.
- ◆ Pre-activity (currently existing) levels of downed logs should be left, unless they exceed the quantities listed in the table below. Harvest activities should supplement pre-activity levels of downed logs up to the maximum level shown below. Exceptions can be made where fire protection needs for life and property cannot be accomplished with this quantity of debris left on site.

Downed Log Requirements for A2/TE-S9

Species	Piece Length (feet)	Pieces per Acre	Small End Diameter (inches)	Total Linear Length (feet)
Ponderosa Pine	> 6	3-6	12	20-40
Mixed Conifer	> 6	15-20	12	100-140
Lodgepole Pine	> 8	15-20	8	120-160

A2/TE-O7. Objective: Scenarios A and B: As a minimum, manage to ensure goshawk species viability by meeting Standard A2/TE-S10; forest plan standards and guidelines that exceed the standards should be used instead of or in addition to.

A2/TE-S10. Standard: Every known active and historical goshawk nesting site used in the past five years should be protected.

- ◆ Seasonal restrictions on activities near nest sites shall be required for activity types that may disturb or harass goshawk pairs while bonding and nesting.
- ◆ 30 acres of the most suitable nesting habitat surrounding all active and historical nest tree(s) shall be deferred from harvest.
- ◆ A 400-acre "Post Fledgling Area" shall be established around every known active nest site. While some harvest activities can occur within this area, retain at least 60 percent of the area in late and old structural condition or all the late and old structural stands if less than 60 percent should be retained. Enhance younger stands toward late and old structural condition, as possible.

Rangelands

Same direction as Alternative 1.

Terrestrial Species and Habitats

Same direction as Alternative 1.

Wilderness and Reserves

Same direction as Alternative 1.

Aquatic Ecosystems

Same direction as Alternative 1. In addition, the following objectives and standards apply to areas identified in decision notices for PACFISH, INFISH, and/or BLM statewide Interim Bull Trout Habitat Conservation Strategies. All standards apply to all four objectives. See Appendix 3-4 for additional information.

A2/AQ-O1. Objective. Manage and provide aquatic habitat to contribute to the maintenance of stocks of anadromous and inland native fish and to ensure consistent, effective, and efficient Endangered Species Act consultation.

A2/AQ-O2. Objective. Provide protection for all watersheds containing designated critical habitat for listed anadromous fish (Key Watersheds).

A2/AQ-O3. Objective. Provide a pattern of protection across the landscape with an emphasis on bull trout for watersheds that have strong assemblages of inland native fish, degraded watersheds with a high restoration potential, and watersheds that provide for metapopulation objectives (Priority Watersheds).

A2/AQ-O4. Objective. Improve current conditions of watersheds by restoring degraded habitat and providing long-term protection to natural resources, including riparian and aquatic resources.

A2/AQ-S1. Standard. Prohibit timber harvest, including fuelwood cutting, in Riparian Conservation Areas (RCAs), except as described below. Do not include RCAs in the land base used to determine the Allowable Sale Quantity; however, any volume harvested can contribute to the timber sale program.

- a. Where catastrophic events such as fire, flooding, volcano, wind, or insects cause damage that results in degraded riparian conditions, allow salvage and fuel cutting in RCAs only where present and future woody

debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives (RMOs), and where adverse effects can be avoided to aquatic resources. Ecosystem analysis at the watershed scale shall be completed prior to harvest, including salvage and fuelwood cutting, in RCAs.

- b. Apply silvicultural practices for RCAs to acquire desired vegetation characteristics where needed to attain RMOs. Apply silvicultural practices in a manner that does not retard attainment of RMOs and that avoids adverse effects on aquatic resources.

A2/AQ-S2. Standard. Cooperate with Federal, tribal, State, and county agencies and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain RMOs.

A2/AQ-S3. Standard. For each existing or planned road, meet the RMOs and avoid adverse effects on aquatic resources as described below:

- a. Ecosystem Analysis at the watershed scale shall be completed prior to construction of new roads or landings in RCAs.
- b. Road and landing locations in RCAs shall be minimized.
- c. Initiate development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, the plan shall address the following items:
 - ◆ Road design criteria, elements, and standards that govern construction and reconstruction.
 - ◆ Road management objectives for each road.
 - ◆ Criteria that govern road operation, maintenance, and management.
 - ◆ Requirements for pre-, during-, and post-storm inspections and maintenance.
 - ◆ Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
 - ◆ Implementation and effectiveness of monitoring plans for road stability, drainage, and erosion control.
 - ◆ Mitigation plans for road failures.
- d. Avoid sediment delivery to streams from the road surface. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible

or unsafe. Route road drainage away from potentially unstable stream channels, fills, and hillslopes.

- e. Avoid disruption of natural hydrologic flow paths.
- f. Avoid side casting of soils or snow. Side casting of road materials is prohibited on road segments within or abutting RCAs.

A2/AQ-S4. Standard. Determine the influence of each road on RMOs. Meet RMOs and avoid adverse effects on aquatic resources by:

- a. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, that have been shown to be less effective than designed for controlling sediment delivery, that retard attainment of RMOs, or that do not protect watersheds from increased sedimentation.
- b. Prioritizing reconstruction based on the current and potential damage to aquatic resources and their watersheds, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of RCAs.
- c. Closing and stabilizing or obliterating and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to aquatic resources in watersheds and the ecological value of the riparian resources affected.

A2/AQ-S5. Standard. Improve existing culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those existing structures would or do pose a substantial risk to riparian conditions. Such improvements should include those structures that do not meet design and operation maintenance criteria, that have been shown to be less effective than designed for controlling erosion, or that retard attainment of RMOs. Priority for upgrading shall be based on risks and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failures.

A2/AQ-S6. Standard. Provide and maintain fish passage at all crossings of existing and potential fish-bearing streams.

A2/AQ-S7. Standard. Modify grazing practices (for example, accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing) that retard or prevent attainment of RMOs or are likely to adversely affect aquatic resources. Suspend grazing if adjusting practices is not effective in meeting RMOs.

A2/AQ-S8. Standard. New livestock handling and/or management facilities shall be located outside of RCAs. For existing livestock handling facilities inside RCAs, assure that facilities do not prevent attainment of RMOs. Relocate or close facilities where these objectives cannot be met.

A2/AQ-S9. Standard. Limit livestock trailing, bedding, watering, loading, salting, and other handling efforts to those areas and times that would not retard attainment of RMOs or adversely affect aquatic resources.

A2/AQ-S10. Standard. Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect aquatic resources.

A2/AQ-S11. Standard. Avoid adverse impacts to listed species and designated critical habitat from mineral operations. If the Notice of Intent indicates that a mineral operation would be located in an RCA, could affect attainment of RMOs, or could adversely affect listed anadromous fish, then require a reclamation plan, approved Plan of Operations (or other such governing document), and reclamation bond. For effects that cannot be avoided, such plans and bonds must address the following items to attain RMOs and avoid adverse effects on listed anadromous fish: the costs of removing facilities, equipment, and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation. Ensure Reclamation Plans contain measurable attainment and bond release criteria for each reclamation activity.

A2/AQ-S12. Standard. Locate structures, support facilities, and roads outside RCAs. Where no alternative to siting facilities in RCAs exists, locate and construct the facilities in ways that avoid impacts to RCAs and streams and that avoid adverse effects on aquatic resources. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate, and

revegetate roads no longer required for mineral or land management activities.

A2/AQ-S13. Standard. Prohibit solid and sanitary waste facilities in RCAs. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RCAs exists, and if releases can be prevented and stability can be ensured, then:

- a. Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
- b. Locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in RCAs.
- c. Monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to aquatic resources and to attain RMOs.
- d. Reclaim and monitor waste facilities to assure chemical and physical stability and revegetation, to avoid adverse effects to aquatic resources, and to attain the RMOs.
- e. Require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.

A2/AQ-S14. Standard. For leasable minerals, prohibit surface occupancy within RCAs for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and RMOs can be attained and adverse effects to aquatic resources can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of RMOs and (2) avoid adverse effects to native aquatic species.

A2/AQ-S15. Standard. Permit sand and gravel mining and extraction within RCAs only if no alternatives exist, if the action(s) will not retard or attainment of RMOs, and if adverse effects to native aquatic species can be avoided.

A2/AQ-S16. Standard. Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the

results of inspection and monitoring to modify mineral plans, leases, or permits as needed to avoid adverse effects on native aquatic species and to eliminate impacts that prevent attainment of RMOs.

A2/AQ-S17. Standard. Design fuel treatment and fire suppression strategies, practices, and actions so as to not prevent attainment of RMOs and to minimize disturbances of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or aquatic resources.

A2/AQ-S18. Standard. Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs. If the only suitable location for such activities is within the RCAs, an exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to aquatic resources a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during pre-suppression planning.

A2/AQ-S19. Standard. Prohibit delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escaped fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

A2/AQ-S20. Standard. Prescribed burn projects and prescriptions should be designed to contribute to the attainment of the RMOs.

A2/AQ-S21. Standard. Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on aquatic resources whenever RCAs are significantly damaged by a wildfire or a prescribed fire is burning out of prescription.

A2/AQ-S22. Standard. For hydroelectric and other surface water development proposals, require instream flows and habitat conditions

that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing of hydroelectric projects, provide to the Federal Energy Regulatory Commission (FERC) written and timely license conditions that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies.

A2/AQ-S23. Standard. Locate new hydroelectric ancillary facilities outside RCAs. For existing ancillary facilities inside the RCA that are essential to proper management, provide recommendations to FERC to assure that the facilities would not prevent attainment of the RMOs and that adverse effects on aquatic resources are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in RCAs to avoid adverse effects on aquatic resources.

A2/AQ-S24. Standard. Issue leases, permits, rights-of-way, and easements to avoid adverse effects on aquatic resources and to avoid effects that would be inconsistent with or prevent attainment of RMOs. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the RMOs or adversely affect aquatic resources. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the RMOs or adversely affect aquatic resources. Priority for modifying existing leases, permits, rights-of-way, and easements would be based on the current and potential adverse effects on aquatic resources and the ecological value of the riparian resources affected.

A2/AQ-S25. Standard. Apply herbicides, pesticides, and other toxicants and chemicals in a manner that does not retard or prevent attainment of RMOs and that avoids adverse effects on aquatic resources.

A2/AQ-S26. Standard. Prohibit storage of fuels and other toxicants within RCAs. Prohibit refueling within RCAs unless there are no other alternatives. Refueling sites within RCAs shall

be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan.

A2/AQ-S27. Standard. Locate water drafting sites to avoid adverse effects on aquatic resources and instream flows, and in a manner that does not retard or prevent attainment of RMOs.

A2/AQ-S28. Standard. Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.

A2/AQ-S29. Standard. Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the RMOs.

A2/AQ-S30. Standard. Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of RMOs or adversely affect aquatic resources. For existing fish and wildlife interpretive and other user-enhanced facilities inside RCAs, assure that RMOs are met and adverse effects on aquatic resources are avoided. Where RMOs cannot be met or adverse effects on aquatic resources avoided, relocate or close such facilities.

A2/AQ-S31. Standard. Design, construct, and operate recreation facilities (including trails) and dispersed sites in a manner that does not retard or prevent attainment of RMOs and avoids effects on aquatic resources.

A2/AQ-S32. Standard. Complete ecosystem analysis prior to construction of new recreation facilities in RCAs.

A2/AQ-S33. Standard. For existing recreation facilities inside RCAs, assure that facilities or use of facilities will not prevent attainment of RMOs or adversely affect native aquatic species. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on aquatic resources cannot be avoided.

A2/AQ-S34. Standard. Adjust dispersed and developed recreation practices that retard or prevent attainment of RMOs or adversely affect aquatic resources. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not

effective in meeting RMOs and avoiding adverse effects on aquatic resources, eliminate the practice or occupancy.

Ecosystem Analysis

Objectives and standards applicable to areas covered by the Northwest Forest Plan are the same as Alternative 1.

Human Uses and Values

Same direction as Alternative 1.

Adaptive Management, Implementation, and Monitoring

Same direction as Alternative 1.

Alternatives 3 through 7

Objectives and standards for Alternatives 3 through 7 are found in Table 3-5. The Ecosystem Management section, which comes first in the table, provides the umbrella for management of Forest Service- and BLM-administered lands in the planning area. Restoration and conservation strategies are integrated within each alternative. A key component of these strategies is use of hierarchical scale relations which includes sub-basin scale review and watershed scale analysis to provide context for prioritization of restoration or conservation management. The User's Guide at the end of this chapter provides a step-by-step process to assist in understanding the alternatives.

Landscape Approach

One intent of Alternatives 3 through 7 is to provide direction to manage landscapes to conserve or restore long-term ecological processes and patterns consistent with achieving short-term and long-term aquatic, terrestrial, and socioeconomic objectives. The Science Integration Team's Landscape chapter of the *Assessment of Ecosystem Components* (1996) identified important patterns, processes, and disturbance mechanisms that together provide ecological functions at scales ranging from individual sites to beyond the project area. Cause-and-effect relationships operate at each

scale and among scales. These alternatives prescribe planning/analysis processes that are designed to account for these cause-and-effect relationships. The landscape assessment found that taking “no action” (that is, continuing current practices, which suppress disturbances such as fire, insects, disease, or others resulting from active vegetation management) has a stronger influence in adversely affecting long-term landscape outcomes than does taking specific management actions to manage risks to landscape processes. Thus, in each alternative it is intended that managers consider where and when specific actions will be taken, as well as where and when to take no action. Such a consideration can best provide for landscapes with ecological processes, vegetation patterns, and disturbance mechanisms that are consistent with the objectives of the alternatives.

Scale of Analysis

It is intended that ecosystem analysis should be tailored to the issue or situation; ecosystem analysis should not be seen as an identical process or magnitude for every situation.

The scale of ecosystem analysis is determined by considering the type of interactions, processes, and conditions (including known values such as cultural and economic) being affected on the landscape.

For example, on large blocks of rangeland where water is scarce and topography is relatively flat, it is appropriate to use a meaningful and efficient boundary as long as the logic and processes of ecosystem analysis are followed and the product provides context and information for decisions.

Process versus Prescriptive/Interim versus Permanent Standards

Table 3-5 lists standards that establish or define processes as well as those that set parameters for certain conditions or activities. Standards were developed to meet objectives and provide assurance or reliability that intended actions will be achieved. Process standards (such as EM-S1) are intended to be implemented as stated. For standards that prescribe parameters (such as TS-S4), it is recognized that conditions vary within the EIS (planning) area and that standards have effects at multiple scales and cause interactions or effects with other components of the ecosystem over time

across the landscape. Local conditions, ecological attainability, risks, and cause-effect relationships with other ecosystem components may create a need to modify how a manager fulfills the intent of a standard to more effectively meet objectives. Each alternative describes the analysis required to modify non-process ICBEMP standards while providing equal or greater assurance of meeting objectives.

Ecosystem Analysis at the watershed scale (using the related six-step logic process, as described in the *Federal Guide for Watershed Analysis*) is the method of analyzing conditions, trends, issues, risks, and interactions. This process is tiered to assessments and decisions at other scales and is done collaboratively with interagency and other involvement. Based on this process, there may be needs or opportunities to modify the application of standards to more effectively meet objectives at the local level. Results would be documented through NEPA processes.

Interpretation of Activity Tables

Activity tables (Tables 3-6 and 3-7) were developed for each forest and range cluster by alternative to aid in analysis of effects, to allow projection of outcomes if the various alternatives were to be implemented, and to indicate relative differences among alternatives. *The activity levels are not targets or allocations.* They are predicted activities, expressed in ranges of numbers, which focus on areas of treatment as opposed to traditional outputs such as timber volume or grazing animal unit months. Objectives depend on Tables 3-6 and 3-7 to differentiate management activity rate, location, and priority among Alternatives 3 through 7. The activities displayed in Tables 3-6 and 3-7 are the active methods that are most often anticipated and associated with restoration of ecological function and processes. A more complete explanation of how the numbers were derived and what is meant by the various activities can be found in Appendix 3-3 in the section entitled “Ruleset”.

Roads Standards

The roads standards (RM-O1 - RM-O4, RM-S1 - RM-S15) acknowledge the needs for roads for management purposes and public use. The standards are designed, however, to also address findings in the *Scientific Assessment* (Quigley and Arbelbide 1996) related to adverse effects on

aquatic and terrestrial habitat. Reducing these impacts to aquatic and terrestrial habitat may cause additional effects to other ecosystem components over time. These cause-effect relationships should be explored and analyzed during ecosystem analysis at the watershed scale and/or in project NEPA analysis. Management activities should reflect an understanding of these relationships over time across the landscape.

Reducing road-related adverse effects will be guided by information and tables in the Rule Set that display forest and range cluster road density reduction priorities, results of the Road Risk Inventory, the need to meet RMOs and terrestrial objectives, and the need to improve overall ecological integrity. In setting priorities and implementing management actions, cause-effect relationships with other ecosystem components including ecological integrity will be considered across the landscape over time. With the extent of the existing road network and the variety of needs, uses, and impacts, actions to reduce adverse impacts will focus on areas or situations where risks are highest.

Relationship of Alternatives 1 and 2 to Table 3-5

Table 3-5 elaborates on Alternatives 3 through 7 but also includes reference to the previous pages of this chapter in which Alternatives 1 and 2 are summarized. Information for Alternatives 1 and 2 is abbreviated in Table 3-5 because the many individual Forest Service and BLM land use plans and framework documents are written at a more detailed scale than is appropriate for this project. Direction from those plans was generalized and consolidated into objectives, standards, and guidelines that are representative of existing plans at the broad scale to provide a point of comparison for Alternatives 3 through 7. Wherever possible, Table 3-5 refers to the corresponding objectives, standards, and/or guidelines from Alternatives 1 and 2, presented on the previous pages, in order to facilitate comparison among all alternatives. See the introduction to Chapter 3 for further discussion of current direction and the development of alternatives.

Navigating Table 3-5

An index to Table 3-5 immediately precedes Table 3-5 to facilitate finding objectives and standards of interest. A User's Guide to the Action Alternatives follow the Comparison of Alternatives section and provides detailed information on the construction of the alternatives.

Index to Objectives and Standards in Table 3-5

Implementing Ecosystem Management

- EM-01** **Implement ICBEMP using multi-scaled hierarchical analysis**
EM-02 **Implement ICBEMP using collaborative intergovernmental approach**

Sub-basin Review

- EM-03** **Conduct brief sub-basin reviews**
 EM-S1 Complete sub-basin reviews within 1-3 years
 EM-S2 Things to consider during sub-basin review
 EM-S3 Collaborative, interagency sub-basin review shall prioritize EAWS
 EM-S4 Use sub-basin review for EAWS and land use plan revisions

Ecosystem Analysis at the Watershed Scale

- EM-04** **Conduct ecosystem analysis at the watershed scale (EAWS)**
 EM-S5 Federal Guide for EAWS shall be used
 EM-S6 Line officers shall set the scope of EAWS
 EM-S7 Category 1 sub-basins EAWS “trigger”
 EM-S8 Listed, Proposed, Candidate species EAWS “trigger”
 EM-S9 Low road density EAWS “trigger”
 EM-S10 Large blocks of native rangeland EAWS “trigger”
 EM-S11 Screening process to exempt activities from EAWS
 EM-S12 Four-year transition period in Category 2 and 3 sub-basins
 EM-S13 Restrictions on modifying standards, including RMOs and RCAs
 EM-S14 Use EAWS to provide context for land management activities

Physical Environment

Soil Productivity

- PE-01** **Maintain soil productivity**
PE-02 **Maintain riparian soils to ensure high quality water**
PE-03 **Develop soil productivity protection and restoration programs**
PE-04 **Restore and maintain nutrient cycling**
 PE-S1 Recommendations for managing coarse woody debris
 PE-S2 Recommendations for amounts of coarse woody debris after wildfire
 PE-S3 Recommendations for large diameter standing live and/or dead wood

Air Quality

- PE-05** **Protect air quality/comply with Clean Air Act requirements**
 PE-S4 Assess management activities that may affect air quality

Terrestrial Strategies

- TS-01** **Maintain and promote native plant communities**
 TS-S1 Maintain or improve native plant communities

Fire Disturbance Processes

- TS-02** **Restore fire as natural disturbance process**
TS-03 **Rehabilitate disturbed areas**
 TS-S2 Rehabilitate/revegetate disturbed areas with ecologically appropriate species
 TS-S3 Use native species in rehabilitation seedings
 TS-S4 Rest burned areas from grazing to maintain soil productivity

Index to Objectives and Standards in Table 3-5 (continued)

Noxious Weeds

- TS-O4 Manage noxious weeds across jurisdictional/political boundaries**
 TS-S5 Implement IWM strategy/ 7 steps of strategy
 TS-S6 Implement IWM strategy on forest lands
- TS-O5 Implement IWM strategy on rangelands**
 TS-S7 Implement steps of IWM strategy, Range Clusters 2 (alts 3,4,&7 outside); 2 and 4 (alt 5);
 and 2,3,&5 (alt 6)
 TS-S8 Implement steps IWM strategy, Range Clusters 3 (alts 3 & 5); and 1,3,4, 5& 6 (alt 4)
 TS-S9 Implement steps IWM strategy, Range Cluster 5 (alt 3 & 5)
 TS-S10 Implement steps IWM strategy, Range Clusters 1,4,&6 (alt 3&7 outside); 1&6 (alt 5);
 1,3,4,5,&6 (alt 6)

Forest Lands

Dry Forest

- TS-O6 Restore ecosystem processes /Dry Forest**
 TS-S11 Increase ppine and wlarch in mature/old single & multi-story forests
 TS-S12 No harvest of dominant or co-dominant ppine outside reserves
 TS-S13 No silvicultural treatments in mature/old forests outside reserves
 TS-S14 No commercial harvest in dry forest terrestrial reserves
- TS-O7 Manage suitable lands to produce commodities/maintain ecosystem**

Moist Forest

- TS-O8 Restore ecosystem processes /Moist Forest**
 TS-S15 Maintain viability of and increase western white pine
 TS-S16 Plant blister-rust-resistant stock/increase western white pine
 TS-S17 Increase dominance of early successional, shade-intolerant species
 TS-S18 No harvest of dominant or co-dominant ppine outside reserves
 TS-S19 No silvicultural treatments in mature/old forests outside reserves
 TS-S20 No commercial harvest in moist forest terrestrial reserves
- TS-O9 Manage suitable lands to produce commodities/maintain ecosystem**

Cold Forest

- TS-O10 Restore ecosystem processes /Cold Forest**
 TS-S21 Maintain viability of/increase whitebark pine and subalpine larch
- TS-O11 Manage suitable lands to produce commodities/maintain ecosystem**

Rangelands

- TS-O12 Restore or maintain rangeland health**
 TS-S22 Implement strategies to maintain/restore watershed function
 TS-S23 On dry shrublands, manage grazing during/after drought years
- TS-O13 Produce livestock forage while restoring ground cover and productivity**
- TS-O14 Reduce encroachment of junipr, conifers, and sagebrush**
- TS-O15 Restore dry grass/dry shrub/cool shrub**
 TS-S24 No livestock grazing in reserves
 TS-S25 No range improvement projects in reserves
- TS-O16 Produce livestock forage and conserve cool shrub/dry shrub/dry grass/RC5**

Aquatic / Riparian Strategies

- AQ-O1 Emphasize riparian and aquatic processes and functions**
AQ-O2 Maintain high quality aquatic and riparian habitat
AQ-O3 Protect high quality waters and identify and maintain habitats
AQ-O4 Category 1 sub-basins: Maintain watersheds

Index to Objectives and Standards in Table 3-5 (continued)

AQ-05	Restore watersheds where they have been degraded
AQ-06	Implement watershed restoration activities based on priorities
AQ-07	Category 2 sub-basins: Maintain strongholds and restore watersheds
AQ-08	Timber and livestock priority areas: Conserve species strongholds
AQ-09	Category 3 sub-basins: Maintain strongholds
AQ-010	Manage riparian vegetation consistent with site potential

Watershed and Riparian Restoration

AQ-S1	Watershed restoration projects to promote long-term ecological integrity
AQ-S2	Attain PFC as a first step
AQ-S3	Develop watershed plans for instream structures and road obliteration/reconstruction
AQ-S4	Offset new sediment-producing activities with sediment abatement
AQ-S5	Design fish/wildlife habitat restoration/enhancement to attain RMOs

Timber Management

AQ-S6	Forest vegetation management in RCAs
AQ-S7	Zone 1 - management to achieve or maintain characteristic stream/valley conditions
AQ-S8	Zone 2a - manage as buffer to Zone 1
AQ-S9	Zone 1 and 2a - not included in suitable timber base
AQ-S10	Zone 2b - manage as additional buffer to Zones 1 and 2a

Grazing Management

AQ-S11	Priorities for revising AMPs based on sub-basin reviews
AQ-S12	Attaining PFC and RMOs
AQ-S13	Limit handling efforts to not prevent attainment of RMOs
AQ-S14	New livestock handling facilities to be located outside RCAs
AQ-S15	No livestock grazing in RCAs in or adjacent to designated critical habitat
AQ-S16	Suspend grazing where riparian protection can't be implemented
AQ-S17	Adjust wild horse management to avoid impacts to RMOs/aquatic resources

Minerals Management

AQ-S18	Locatable minerals - Avoid or minimize adverse impacts to aquatic resources
AQ-S19	Locate structures outside of RCAs where practicable
AQ-S20	Mine wastes and toxic chemicals
AQ-S21	Leasable minerals - No surface occupancy in RCAs
AQ-S22	Restrictions on sand and gravel extraction within RCAs
AQ-S23	Develop inspection, monitoring, and reporting requirements

Recreation Management

AQ-S24	Prevent or minimize adverse effects to from recreation facilities in RCAs
AQ-S25	Design recreation facilities to not retard/prevent attainment of RMOs
AQ-S26	Existing recreation facilities in RCAs to not prevent attainment of RMOs
AQ-S27	Fish/wildlife user facilities to not prevent attainment of RMOs
AQ-S28	Adjust recreation practices that retard or prevent attainment of RMOs

Fire Suppression/Fuels Management

AQ-S29	Fuel treatment/fire suppression to not prevent attainment of RMOs
AQ-S30	Fire suppression activities restrictions in RCAs
AQ-S31	Locate centers for fire incident activities outside of RCAs
AQ-S32	Prohibit delivery of chemicals to surface waters
AQ-S33	Prescribed burns/prescriptions consistent with attainment of RMOs
AQ-S34	Prohibit backfire operations that increase fire intensities in RCAs
AQ-S35	Establish team to develop rehab plan to attain RMOs

Index to Objectives and Standards in Table 3-5 (continued)

Lands/Permits/Facilities

AQ-S36	For hydro projects, require instream flows to maintain resources
AQ-S37	Complete EAWS prior to issuing water conveyance permits
AQ-S38	Determine/establish instream flow requirements for species needs
AQ-S39	Revoke conveyance permits for those without state water rights
AQ-S40	All water conveyance intakes shall meet established standards
AQ-S41	Conveyance permits require best methodology to conserve water
AQ-S42	Hydroelectric ancillary facilities to not prevent attainment of RMOs
AQ-S43	New developments that may adversely affect RCAs not permitted
AQ-S44	Leases, permits, etc., to avoid effects inconsistent with attainment of RMOs

Additional Riparian Management

AQ-S45	Eliminate or reduce risks from transport of toxic chemicals
AQ-S46	Develop contingency plans for chemical spills or contamination
AQ-S47	Herbicides etc. to not retard or prevent attainment of RMOs
AQ-S48	Prohibit storage of fuels and toxicants within RCAs
AQ-S49	Locate water drafting sites to avoid adverse effects on aquatics

AQ-O11 Manage grazing in wetlands to prevent impairment of functions

AQ-O12 Minimize disturbance to redds for candidate & sensitive species

AQ-S50	Manage livestock to prevent disturbance to redds for T,E,P species
AQ-S51	Manage livestock to minimize impacts on redds for C & S species

Water Quality

AQ-O13 Maintain and improve water quality

AQ-S52	Maintain water quality in Outstanding Resource Waters
AQ-S53	Comply with state or tribal anti-degradation requirements
AQ-S54	Comply with TMDLs in Water Quality Limited segments
AQ-S55	Incorporate state WQLS priority lists into intergovernmental prioritization process
AQ-S56	Adjust activities to meet water quality standards

AQ-O14 Develop management actions supported by EAWS to restore WQLS

Terrestrial and Aquatic Species and Habitats

HA-O1 Restore and/or maintain and habitat conditions

Viable populations

HA-O2 Provide habitat for viable populations, recovery of listed spp, social needs

HA-S1	Manage habitats for long-term viability, especially edge of range
HA-S2	Management to restore vegetation composition, linkage, patch size
HA-S3	Restore/maintain habitats for free movement between habitat blocks
HA-S4	Improve/restore linkages at known habitat bottlenecks
HA-S5	Develop mature/old forest structural definitions
HA-S6	Analysis and strategies for mature/old structure stands
HA-S7	Use local analysis to develop snag levels
HA-S8	Use local analysis to develop downed wood levels
HA-S9	Manage firewood programs consistent with snag and downed wood standards
HA-S10	Restore mountain mahogany, bitterbrush, quaking aspen
HA-S11	Restore native plants on important wild ungulate winter range
HA-S12	Protect bat roost sites and hibernacula

Protection/Restoration of Listed Species Habitats

HA-O3 Restore or protect habitat for listed species; manage habitat to prevent listing

HA-S13	Manage habitats to recover special status species, prevent listings
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HA-O4 Manage rangelands for special status species habitat requirements

HA-O5 Provide for continued existence and long-term conservation of species

Index to Objectives and Standards in Table 3-5 (continued)

Recovery of Federally Listed Aquatic and Terrestrial Species

- HA-06 Contribute to range-wide recovery of federally listed or proposed species**
- HA-S14 Implement recovery plans, document departures
 - HA-S15 Apply standards & guides from recovery documents for raptors
 - HA-S16 Adopt IGBC grizzly bear resource management guidelines/situations
 - HA-S17 Management activities consistent with IGBC access management recommendations
 - HA-S18 Habitat mapping/cum effects in high road density recovery areas
 - HA-S19 Evaluate IGBC strategy for reducing grizzly bear mortalities, Selkirk and Cabinet/Yaak

Wildlife and Livestock Conflicts

- HA-07 Management practices to reduce conflicts: livestock / carnivores & bighorn / domestic sheep**
- HA-S20 Minimize conflicts between carnivores and livestock mgt. practices
 - HA-S21 Reduce potential disease transmission between bighorn / domestic sheep

Human Uses and Values

Collaboration

- HU-01 Foster support of decisions by promoting collaboration - broad range**
- HU-02 Foster support of decisions by promoting collaboration - intergovernmental**
- HU-S1 Initiate MOU to offer advice to federal land managers

Economic Activity

- HU-03 Derive soc/econ benefits, promote commercial activities**
- HU-04 Efficiently deliver goods and service from FS/BLM-administered lands**
- HU-05 Minimize large annual shifts in commercial activity**
- HU-06 Emphasize customary economic uses in rural communities**
- HU-07 Contribute to economic diversity/local economic development goals**
- HU-08 Collaborate with local entities for compatibility of land uses**
- HU-09 Reduce risk of life/property loss due to wildfire; decrease costs**
- HU-S2 Involve locals in development of coordinated fuel management plans

Recreation Opportunities

- HU-010 Supply recreation opportunities consistent with public policies/abilities**
- HU-S3 Use ROS to meet recreation management goals
- HU-011 Identify opportunities to provide public access for recreation**
- HU-012 Foster and strengthen partnerships to manage facilities & services**
- HU-013 Meet visual quality objectives**
- HU-014 Maintain or enhance scenic integrity**

Cultural Resources

- HU-S4 Survey and evaluate significance of federal lands for cultural resources
- HU-S5 Evaluate and nominate sites to NRHP
- HU-S6 Assess site-specific projects for effects on cultural resources

Transportation and Utility Corridors

- HU-015 Ensure reliable and buildable utility corridors**
- HU-S7 Use 1993 Western Regional Utility Corridor Study as reference
- HU-016 Ensure access essential for corridor infrastructure maintenance**
- HU-S8 Provide access to and maintenance of existing utility ROW
- HU-017 Encourage integrated ROW vegetation management to minimize impacts**

Index to Objectives and Standards in Table 3-5 (continued)

Federal Trust Responsibility and Tribal Rights and Interests

Government-to-Government Cooperation and Relations

TI-O1	Maintain government-to-government relationship with affected tribes
TI-S1	Use consistent approach to government-to-government consultation
TI-S2	Agreements with tribal governments regarding repatriation procedures
TI-S3	Recognize tribal management efforts and work cooperatively
TI-S4	Cooperate with tribes to restore/research treaty/trust resources
TI-O2	Assess sense of place and incorporate into management
TI-S5	Complete place assessments as part of ecosystem analysis

Habitat Conditions

TI-O3	Recognize native plant communities as traditional resources
TI-S6	Establish programs for restoration/maintenance of native plant communities
TI-S7	Provide habitat conditions to support harvestable resources
TI-S8	Consider protection/restoration of treaty resources on ceded lands
TI-S9	Assess habitat where it has social/ traditional importance
TI-S10	Adopt aquatic conservation strategy
TI-S11	Least restrictions on tribes to implement ESA conservation measures

Road Management

RM-O1	Cooperate with partners on road design, operations, maintenance
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Road-related Adverse Effects

RM-O2	Reduce road-related adverse effects
RM-S1	Reduce road-related adverse effects
RM-S2	Timber and livestock priority areas: management actions to not increase erosion, sediment
RM-S3	Conduct Road Condition/Risk Assessment
RM-S4	Develop or revise Access and Travel management plans
RM-S5	Reduce effects on aquatic, riparian, terrestrial species and habitats
RM-S6	Determine habitat effectiveness ratings to reduce risk caused by human access
RM-S7	Design and improve culverts to accommodate 100-year floods

Road Density

RM-O3	Reduce road density where roads have adverse effects
RM-S8	Decrease road miles in High and Extreme road density classes
RM-S9	Use existing transportation networks in High & Extreme classes

Road Construction

RM-O4	New road construction to prevent or minimize adverse effects
RM-S10	Roads and landings should be outside RCAs
RM-S11	Timber and livestock priority areas: no roads within 150' of active channel margins
RM-S12	Maintain/restore fish passage, spawning, etc.
RM-S13	Avoid high hazard areas, prevent sediment delivery to streams and RCAs
RM-S14	Prohibit side casting in RCAs
RM-S15	Don't increase road density by more than one density class in areas with none/low/very low road densities
RM-S16	No road construction in reserves or unroaded areas > 1,000 acres

Index to Objectives and Standards in Table 3-5 (continued)

Adaptive Management / Monitoring

Adaptive Management

AM-O1 Make appropriate adjustments in management strategies

- AM-S1 Use adaptive management principles
- AM-S2 Adjustments to 'reserve' boundaries

Monitoring

AM-O2 Monitor changes in conditions and take action to meet ecosystem management goals

- AM-S3 Develop integrated intergovernmental monitoring and evaluation protocol
- AM-S4 Implement annual monitoring programs at various scales
- AM-S5 Critical monitoring shall be implemented immediately
- AM-S6 Update riparian monitoring within grazing allotments
- AM-S7 Use monitoring to modify management actions to achieve objectives

Accountability

A-O1 Line officers are accountable for implementation

- A-S1 State Directors/Regional Foresters ensure accountability
- A-S2 Develop interagency implementation MOU
- A-S3 Provide opportunities for participation in implementation oversight
- A-S4 Implement accountable, measurable standards